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THE
DIET
QUESTION,
GIVING
THE REASON WHY.

BY
SUSANNA W. DODDS, M.D.

NEW YORK :
FOWLER & WELLS CO., PUBLISHERS,
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1884.

A NEW BOOK.

HEALTH IN THE HOUSEHOLD; OR, HYGIENIC COOKERY.

By **SUSANNA W. DODDS, M.D.**

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The author of this work is specially qualified for her task, as she is both a physician and a practical housekeeper. It is unquestionably the best work ever written on the healthful preparation of food, and should be in the hands of every housekeeper who wishes to prepare food healthfully and palatably. The best way and the reason why are given. It is complete in every department. To show something of what is thought of this work, we copy a few brief extracts from the many

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"No spice but hunger; no stimulant but exercise."—FELIX L. OSWALD, M.D.



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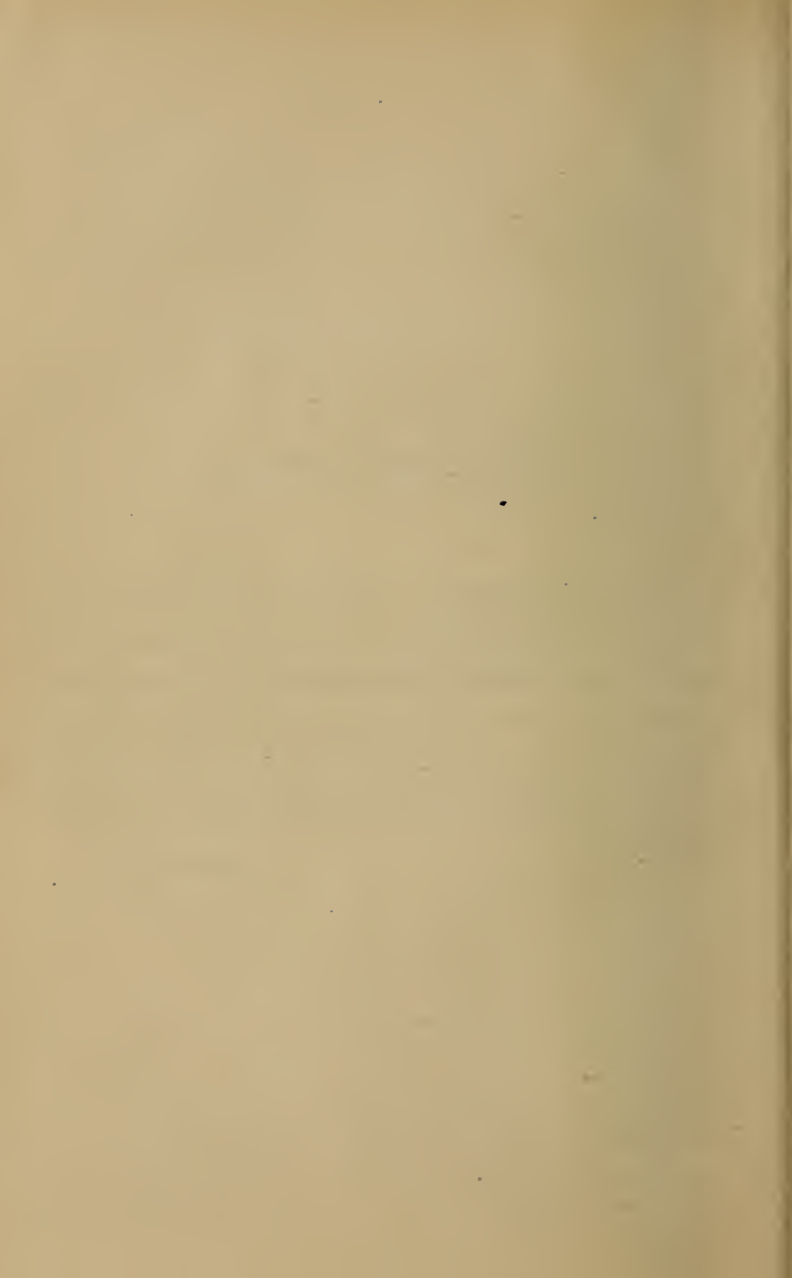
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PUBLISHERS' PREFACE.

THE following pages from "Health in the Household ; or, Hygienic Cookery," by Mrs. Dr. Dodds, are published in this form in order that the "Reason Why" of the food reform question may have a more extended circulation. It is unquestionably the clearest and best statement of the case that has yet been made, and as such, is commended to the public by

THE PUBLISHERS.



INTRODUCTORY.

THE question is often asked, "What is this hygienic diet?" and it would be well for its advocates, if a correct answer were always given. This food differs so materially from that in common use, that persons who have simply heard of it, are apt to form erroneous ideas in regard to it. For example, if you state that a hygienic breakfast-table furnishes neither coffee nor tea, no beefsteak, butter, nor hot biscuits, you are met with the question, "What do they eat?" And before you can begin to reply, the conclusion is reached that the table must be woefully bare, and the food on it lacking in wholesome variety and good flavor (since there are no seasonings), and also in nutritive qualities. In other words, that it is a sort of starvation diet, which sensible people would at once reject.

Now, nothing could be farther from the truth than such an inference; and patients at our table have often remarked that if people only understood the real character of the hygienic diet, they would think more favorably of it. In the first place, the hygienic table admits of as great a variety as any other; and once the palate adapts itself to the change—which requires but a short time—the food is quite as keenly relished as that prepared in the ordinary way. In the next place, one does not tire of it; even in warm spring mornings, when other people feel the need of a *tonic* to give them an appetite, the sound of the breakfast-bell in hygienic households is always welcome. The presence of *natural hunger* makes the food taste good, while at the same time it is the best possible aid to digestion. The fresh ripe fruits,

the crisp little rolls, twenty minutes from the oven, the well-cooked oatmeal, and the luscious stewed fruits—to say nothing of good baked potatoes, and other side dishes that find their way to the table—all are enjoyed with a zest that rarely belongs to steak, biscuit and coffee.

But a more important point to the physiologist is, that the food eaten is far more healthful and nutritious than the aforesaid articles ; from the simple fact that it contains a much larger per cent. of those substances that are necessary to form bone, teeth, muscles, tendons, and the other tissues of the body. This is why one can work longer and with less fatigue on hygienic food than on any other ; it *nourishes* better. Were proof needed on this point, the tables in Part I., giving the constituents of food, ought to furnish it.

Still another virtue belonging to this diet is, that it contains no stimulating or abnormal substances, to tax the vital powers in getting rid of them ; no salt, pepper, spices, or other irritating condiment ; everything is *usable*, in one way or another. Neither is there an excess of oily or saccharine matter, to clog the digestive or the excretory organs. But, to get at once to the root of the matter, we will take up the a, b, c, of the hygienic dietary ; resting assured that if our *premises* are correct, the conclusions will take care of themselves.

All persons who are thorough hygienists, according to the teachings of the late R. T. Trall, M.D., believe that inorganic substances are incapable of nourishing or building up the vital structures of our bodies. To begin with first principles, we hold that vegetable organisms are fed by inorganic substances, and by these alone ; that animal organisms are fed by organic substances, and by these only. We also maintain that, other things being equal, the products of the vegetable kingdom are better suited to man's needs than are those of the animal kingdom ; and that out of the former, those products are best suited for foods which most

nearly supply the waste of the various tissues. There are, no doubt, many varieties in the vegetable kingdom which can be and sometimes are used for foods, but which rank low in nutritive value, and are otherwise inferior in quality ; these, if eaten, are recommended only as occasional dishes.

If we follow scientific analysis, we must place first in the rank of nutritious foods, the various preparations of wheat ; then the other grains, some of which are better adapted to our wants than others. Fruits, as a class of foods, are ranked higher than vegetables by hygienists, and some fruits higher than others ; while among the vegetables proper, there are certain kinds that are better suited for human food than others.

The flesh of animals, as will hereafter be shown, does not begin to compare with the whole grains—or even with some vegetables—in the quantity of nutritive matter contained ; so that if used, it must fall below the latter in respect to nutrition. Besides, it carries with it a certain amount of substance that can not be utilized by the vital organs ; whence it follows that these organs must do extra work in expelling this substance from the vital domain. All animals, however healthy, are every moment of their lives throwing off a large per cent. of worn-out or effete matter ; many times larger than that which is expelled from the surfaces of fruits or vegetables. This matter is in every tissue, and in every drop of blood or other fluid in the tissues ; nor does the act of killing the animal improve the condition of things. On the contrary, the moment that life is extinct decomposition begins, and the waste is much more rapid ; hence the use of antiseptics, as salt, soda, saltpetre, etc., to arrest decay.

Animal foods therefore are exceedingly unstable, not to say impure, in their best estate ; whence their character as *inflammatory* food. All animal products, as butter, eggs, cheese, etc., partake of this character, in a greater or less

degree. Beef and mutton are perhaps the best of the flesh foods. Fish, fowls, oysters, etc., belong to lower orders of animal life, some of which are infested with vermin or animalculæ,* and all of which feed upon less inviting food substances than do the nobler animals.

A further objection to the use of meat is found in the fact that many animals are afflicted with acute or chronic diseases, and are often rushed into market in that condition. This is particularly true of swine, and often indeed of cattle. Were the actual statistics given in all their loathsome details, of scurvy in swine, of ulcerated livers, of deaths from trichinæ, of beef discolored from venous blood, and often from semi-putrefaction, it would be enough to pall the keenest appetite, even though it failed to convince the most perverted judgment.

In the following pages the subject will again be adverted to, and reasons given why hygienists regard meat, the best of it, as second-rate food ; and salt, its usual condiment—which is a metallic, inorganic substance—as no food at all. Some hints will also be given as to the relative merits of the various food products, both in regard to health, and also to their nutritive value. It will likewise be shown, that so far as the *quality* of the hygienic diet is concerned, the resources of nature, as well as of art, are not by any means exhausted. Indeed; the hygienists themselves have scarcely more than commenced to study the matter. The place to begin, of course, is in the department of agriculture. It is well known that grains, fruits and vegetables, are capable of improvement by culture, to an almost unlimited extent ; and there is little if any doubt that nearly all fruits fully ripe, and in their finest development, would be exceedingly palatable as nature furnishes them. It is much to be hoped that an enlightened public sentiment, on this subject as on others,

* The liquor of oysters is said to be filled with infusoria or animalculæ.

will help to bring about a higher culture of all these products, and especially of fruits.

Some dietetic reformers, in their eagerness to gratify a perverted palate, have fallen into the habit of mixing various foods together, indiscriminately, in the preparation of a single dish. Such admixture, if confined to one class of products, for instance the grains, would not be amiss ; but the plan of putting together in the same dish, fruits and vegetables (say cabbage, beans, beets, squashes, etc., with raw or cooked fruits), is a practice that can not be too strongly condemned. Sound stomachs might be able to manage these conglomerations, but weak or diseased ones would certainly be the worse for it ; and it is a question whether even the best digestion, under such treatment, would not finally be impaired.

This brings us to the subject of the dietetic classification of foods. It also suggests a reason for some slight departure in this book from the ordinary grouping of food products. For example, under the head of "Vegetables," only such products are named as seem to be dietetically allied to each other ; no attention being paid to scientific technicalities. In like manner, tomatoes and melons are classed with vegetables, because they are intended to be eaten with them. And it might be added, that meats, if eaten, are thought to digest better taken with vegetables, rather than with fruits. There is no doubt that very oily substances eaten with fruits, make rather a bad mixture ; and it ought to be thoroughly well known that the large amount of sugar ordinarily cooked in the latter, renders them difficult to digest, and often causes pain in the stomach, or *cholera morbus*, particularly if they are eaten with vegetables. The trouble is not with the fruits, but with the sugar, and the bad combinations that are made.

The subject of food combinations—whether cabbage and raw apples will digest well together, or strawberries and

cucumbers, or grapes and Lima beans, etc., etc.—is a topic that in the main has been quite overlooked. In the last few years, however, some careful observations have been made by hygienists, in the management not only of very sensitive stomachs, but also those of ordinary strength; and the conclusion has been reached, that here as elsewhere, there are certain general principles underlying the whole subject, which, if properly understood, would be of much value. Certain physicians, among them the writer of this book, believe that (for feeble stomachs at least) fruits and vegetables do best when taken at separate meals; that vegetables, when eaten, should be taken at dinner; and that disregard of these rules often leads to indigestion. It is a question, then, whether with care in these respects, there would be that difficulty which some persons experience in eating fruits, and others in eating vegetables.

In the management of patients with even a moderate amount of vitality, the writer has found no difficulty in enabling them to eat fruits in abundance, and without the slightest inconvenience; and to a certain extent the same is true as respects the use of vegetables. A very good rule for general observance, is to make the breakfast of bread and fruit, and perhaps some grain preparation; the dinner of bread, vegetables, etc.; and the supper of bread and fruit only, or bread and fruit juice. It is also a good plan, if raw apples, peaches, or grapes are eaten, to take them at breakfast, and by all means at the *beginning* of the meal. Let the fine sub-acids touch the bottom of the stomach, so to speak. If melons are eaten, they should be taken at or before the dinner; if at the meal, they should be served at the commencement of it, not at the close. These rules have been found to work well with persons who are sick, and they can hardly work ill with those who are in good health. Or, as it is sometimes said, "What will make a sick man well, will also keep him well."

The question is frequently asked, whether the hygienic diet is to be recommended from an economic stand-point. So far as the table itself is concerned, the one way of living is probably about as expensive as the other ; in other words, the money that is usually spent for tea, coffee, sugar, butter, meat, condiments, etc., is laid out for choice grains, ripe, dried or canned fruits, and the *best* of vegetables. But if there is a saving of time and money in the enjoyment of uninterrupted good health, then indeed, there is economy in hygienic living. A lady who has tried both ways, and who was formerly a patient and boarder in our house, gives her testimony as follows :

“My husband and I have been married twelve years ; and it is only since leaving your house, two years ago, that we have ever been able to save a cent. Doctors, medicines, and what we *then* supposed to be the ‘best of living,’ viz., meat three times a day, and beef-tea between meals for strength (?), ate up the small salary. Last year we bought a lovely little home, and on a salary of fifteen hundred dollars, we saved five hundred to pay on the place. And the diet—why, we never lived so well ; good bread of Akron Graham flour, fresh vegetables, and the best of fruits and grains. We kept a horse, and hired a man to work the garden. We feel that we have only just *begun* to live. In health I am better ; more like my real self ; more sunshine, contentment, and happiness—all owing to a good, pure diet, fresh air and exercise.”

To those who may desire to understand more fully the Reasons why hygienists depart somewhat from the ordinary methods of preparing foods, the chapters in Part I. may be of interest. And should the reader find in these more or less repetition of what has been stated elsewhere in the work, the simple fact that it has all been written piecemeal may in part account for it. The items have been jotted down from time to time, as the writer could note

them ; and in the end there was very little chance to re-write, or even rearrange the matter in hand. Another six months would have made a more orderly work, but it would not have silenced the clamor for *the book at all hazards*.

There ! now, good friends, *take* the volume just as you find it ; and if you can write a better, the author of this will gladly help you to sell it. But one thing—do not decline the present one, and then come to us with inquiries of *this* sort : “How do you steam these choice grains?” “Tell me how you make your cream biscuits?” “What are your rules for preparing those fine fruits?” “How do you manage to cook vegetables so nicely?” “What ails my little Graham *rolls* that they never look like yours?” etc., etc. Take the book, follow its directions, and you will find out all about it.

PART I.

THE REASON WHY.

CONSTITUENTS OF FOOD.

THE following tables, giving the composition of the various grains, together with that of beans, peas, lentils, potatoes, beef, mutton, eggs, milk, and cream, are taken from Pavy, that well-known authority on Food and Dietetics.

TABLES.

Varieties of Wheat in the dry state.*—(PAYEN.)

	<i>Hard wheat. (Venezu- ela.)</i>	<i>Hard wheat. (Africa.)</i>	<i>Hard wheat. (Tagan- rog.)</i>	<i>Semi- hard wheat. (Brie.)</i>	<i>White or soft wheat. (Tuzelle.)</i>
Nitrogenous matter ...	22.75	19.50	20.00	15.25	12.65
Starch	58.62	65.07	63.80	70.05	76.51
Dextrin, etc.	9.50	7.60	8.00	7.00	6.05
Cellulose	3.50	3.00	3.10	3.00	2.80
Fatty matter	2.61	2.12	2.25	1.95	1.87
Mineral matter	3.02	2.71	2.85	2.75	2.12
	100.	100.	100.	100.	100.

* In an ordinary state, grain contains from 11 to 18 per cent. of water.

Varieties of grain in the dry state.—(PAYEN.)

	<i>Rye.</i>	<i>Barley.</i>	<i>Oats.</i>	<i>Maize.</i>	<i>Rice.</i>
Nitrogenous matter...	12.50	12.96	14.39	12.50	7.55
Starch	64.65	66.43	60.59	67.55	88.65
Dextrin, etc.	14.90	10.00	9.25	4.00	1.00
Cellulose.....	3.10	4.75	7.06	5.90	1.10
Fatty matter	2.25	2.76	5.50	8.80	0.80
Mineral matter	2.60	3.10	3.25	1.25	0.90
	100.	100.	100.	100.	100.

Composition of Buckwheat.—(PAYEN.)

Nitrogenous matter	13.10
Starch, etc.	64.90
Fatty matter	3.00
Cellulose	3.50
Mineral matter	2.50
Water	13.00
	100.

Composition of Beans.—(PAYEN.)

	<i>Horse Bean.</i>	<i>Broad or Windsor bean, dried in the green state, and decorticated.</i>
Nitrogenous matter	30.8	29.05
Starch, etc.	48.3	55.85
Cellulose	3.0	1.05
Fatty matter	1.9	2.00
Saline matter.....	3.5	3.65
Water	12.5	8.40
	100.	100.

French or Kidney Bean.—(PAYEN.)

Nitrogenous matter.....	25.5
Starch, etc.	55.7
Cellulose.....	2.9
Fatty matter	2.8
Mineral matter.....	3.2
Water	9.9
	100.

Dried Peas.—(PAYEN.)

Nitrogenous matter.....	23.8
Starch, etc.	58.7
Cellulose	3.5
Fatty matter	2.1
Mineral matter	2.1
Water	8.3

Lentils.—(PAYEN.)

Nitrogenous matter.....	25.2
Starch, etc.	56.0
Cellulose	2.4
Fatty matter	2.6
Mineral matter.....	2.3
Water	11.5

100.

Potato.—(PAYEN.)

Nitrogenous matter.....	2.50
Starch	20.00
Cellulose.....	1.04
Sugar and gummy matter.....	1.09
Fatty matter	0.11
Pectates, citrates, phosphates, and silicates of } lime, magnesia, potash, and soda	1.26
Water	74.00

100.

Sweet Potato.—(PAYEN.)

Nitrogenous matter.....	1.50
Starch	16.05
Sugar	10.20
Cellulose ...	0.45
Fatty matter.....	0.30
Other organic matter.....	1.10
Mineral salts	2.60
Water	67.50

Lean Beef.—(LETHEBY.)

Nitrogenous matter.....	19.3
Fat	3.6
Saline matter.....	5.1
Water.....	72.0

100.

Lean Mutton.—(LETHEBY.)

Nitrogenous matter.....	18.3
Fat	4.9
Saline matter.....	4.8
Water	72.0
	<hr/>
	100.

*White Fish.**

Nitrogenous matter.....	18.1
Fat	2.9
Saline matter.....	1.0
Water.....	78.0
	<hr/>
	100.

Eggs.—Entire contents.†

Nitrogenous matter	14.0
Fatty matter.....	10.5
Saline “	1.5
Water	74.0
	<hr/>
	100.

Egg—White of.

Nitrogenous matter.....	20.4
Fatty matter.....	—
Saline “	1.6
Water.....	78.0
	<hr/>
	100.

Egg—Yolk of.

Nitrogenous matter.....	16.0
Fatty matter.....	30.7
Saline “	1.3
Water.....	52.0
	<hr/>
	100.

Milk (Cow's).—(LETHEBY.)

Nitrogenous matter.....	4.1
Fatty matter.....	3.9
Lactin	5.2
Saline matter.....	0.8
Water	86.0
	<hr/>
	100.

* From Pavy's "Food and Dietetics," p. 171.

† *Ib.*, p. 182.

Cream.—(L. FIEBY).

Nitrogenous matter.	2.7
Fatty matter.	26.7
Lactin	2.8
Saline matter.	1.8
Water	66.0
	<hr/>
	100

FOOD AND PHYSICAL DEVELOPMENT.

The food question is one of the most important, not to say the most difficult, that the physiologist has to handle ; and with all the experience of bygone ages, we have not as yet been able to fully unravel the mysteries of this many-sided problem. What products to select and the best methods of growing them, how to prepare the food and how often to partake of it, what quantity is necessary to supply the waste of the tissues, what variety is needed, and what combinations produce the best digestion—all these, and more, remain to be studied in the light of known facts and of physiological science.

As regards the nature or quality of foods, it must be conceded that that food is best which *most nearly supplies the natural waste of the tissues*. And those articles which contain the *largest amount* of the materials necessary to build up the body, these being in the required proportions, would rank higher in value than other articles which are poor in this respect. Nature has given us a bountiful supply of food products, some rich in quantity and variety of nutritive elements, and some containing an abundance of *certain* food principles, with rather a meager supply of others ; while there are many that yield only a limited amount of nutrient matter. Thus, the lavish profusion that is furnished to our hand gives room for the exercise of judgment in selecting foods, as well as skill in preparing them.

The results of chemical analysis, as given by Liebig,

Boussingault, Payen and others, place the grains at the head of all nutritive substances, as will be seen by the tables at the beginning of this chapter. And while it does not follow that we must, as a rule, use the more nutritious articles of diet to the *exclusion* of the others, it would seem to be in accordance with reason that the former should occupy a more prominent place in the food list than the latter. For example, wheat, which contains 85 per cent. of solid matter, would be better suited to sustain life than turnips, that have only 11 per cent.; and better also than meat, that has but 36 per cent. In so far, therefore, as chemical analysis can give us any light, the grains rank highest as foods.

But it is sometimes said that the relative value of the different food products can be better determined by experience than by chemical analysis; and as there is not space in this short chapter to investigate the latter, let us give a passing thought to the former. Experience, to be of value, must be derived from the observation of a sufficient number of individuals to give us something like a *rule*, deduced from facts which these individuals can furnish. What, then, are the facts? Looking over the nations of the earth, savage and civilized, we find great disparity among them as to the physical development of their inhabitants; some are well proportioned, with good bones and muscles, sound teeth, robust bodies, and all the other evidences of fine growth and excellent general health. Others are small in stature, ill-proportioned, wanting in muscular development, and otherwise inferior in *physique*; and while it must not be taken for granted that food alone is responsible for these several results, still it can not be denied that it is an important factor in the case. Comparing the dietetic habits of the people of these nations, there has been found to exist a very striking correspondence between the quality of the food they eat, and the size, strength and symmetry

of their bodies. It has also been noted by travelers that in those countries, in Europe and elsewhere, in which the people were remarkable for long life, strength of body and fine proportions, combined with rare personal beauty and good complexions, their dietetic habits have been relatively simple, and the food itself restricted for the most part to the products of the soil.

The peasantry of Europe furnish examples of whole nations of people living *almost* exclusively on a grain and vegetable diet, with perhaps a moderate supply of milk. They use coarse bread, and an abundance of cereals, variously prepared. They eat very little meat, and their food as a whole, contains few condiments. It is likewise worthy of remark, that among these simple rural people, who can not afford either the rich dietary or the sparkling wines and other stimulating drinks used by the wealthy, there is a smoothness of skin and purity of complexion that is quite the exception among the upper classes. This is particularly noticeable in England and Scotland; and it is said to be the same in Germany. There is a certain wholesome comeliness among the peasant lads and lasses that does not quite belong either to the people of rank (who, having every facility for mental and physical culture, *ought* to look well), or to the denizens of cities, whose habits of eating and living are less simple than theirs. According to Felix L. Oswald, M.D., "The strongest men of the three manliest races of the present world are non-carnivorous: the Turanian mountaineers of Daghestan and Lesghia, the Mandingo tribes of Senegambia, and the Schleswig-Holstein *Bauern*, who furnish the heaviest cuirassiers for the Prussian army, and the ablest seamen for the Hamburg navy."

The following item from the *San Francisco Chronicle*, is another bit of evidence showing that the best of muscle can be made from a diet that is simple and sparing, and that contains very little animal food:

“YOKOHAMA, *July 1, 1882.*—Japan furnishes an example that tells largely in favor of a vegetarian diet. That the Japanese are a people of muscle and great physical endurance is apparent on every hand. The specimens of muscular development shown in the build and structure of the working classes, are evidences of great strength and hardiness. The diet of these men is entirely of vegetables and fish, and they are very economical feeders at that. The quantity of food they require, or at least the quantity they eat, is astonishingly small when compared with the food devoured by the meat-eaters from the Western world. The amount of manual labor they perform is simply prodigious. The coolie, who takes the place of, and who does the work for which oxen and horses are utilized elsewhere, is about as strong, and can accomplish about as much heavy work as the animals themselves. They are possessed of immense power of limb, being able to pull loads that would be considered as much as any other draft animal could draw. It is wonderful to see them walking away with the heavy loads they easily move ; and as carriers of burdens upon the shoulder they are capable of startling achievements. Seemingly their frames are as tough as steel, not susceptible of cold or intense heat—going thinly clad in freezing weather, and not shrinking from the sun in its most oppressive season.”

There are also abundant statistics, and some of them from excellent authorities, showing that among the savage tribes there exist the most startling contrasts in respect to longevity, beauty of form, and strength of muscle. And the travelers who have made note of these facts, and who in all probability cared nothing whatever for dietetic rules or theories, tell us that the meanest and most hideous forms of human life (as the Calmucks) were found among those people who subsist almost exclusively upon animal food, and this often of a very low order. On the other hand,

those races that are celebrated for their beauty of form and complexion (as the Circassians), are an agricultural people, drawing their subsistence *chiefly* from the soil.

But leaving the Europeans and Asiatics to work out their own destinies, may we not venture to inquire whether certain physiological defects among our own people, defects so pronounced as already to be considered national, may not in some degree be traceable to their dietetic habits? Is there not some *error*, which if corrected, would lead to more beneficent results? There must be a reason why sound teeth are the exception; why natural dentine gives place to porcelain; why the teeth that remain are ill-shapen, loose in their sockets, and covered with scurvy. There must be a reason why heads are bald so early; why heavy tresses of beautiful hair, even on youthful brows, are so rare; why the few thin, straggling locks that remain, are harsh and faded, and the scalp covered with a scurvy dandruff. There must be a reason why firmly knit muscles, giving to the human figure a beauty and loveliness of form almost divine, have left in their stead, loose, flabby tissues, with very little muscular fiber in them. There must be a reason why the rose tints fade so early from the cheeks of the young; why healthful boys and girls are converted into little, spindling, wizened-faced creatures, looking more like old men and women of diminutive stature, than like thriving, growing children. There must be a reason why even in infancy the spine so often refuses to hold the body erect, and disease and deformity ensue. There is a REASON, and it is our duty to find it.

If the food we eat does not contain the elements out of which dentine is made, how can we expect to have good teeth? If it is defective in nutritive quality, having a lack of those materials which make fibrin, by what process can we hope to clothe the bones with muscles? If it has a meager supply of the "salts" which enter into the forma-

tion of the bones, why should not the little children (and those of larger stature) be limp and rickety? If the nutritive substances that are found in hair are wanting, is it not reasonable that the middle-aged, and even our young people, should have bald heads? If our tables do not supply the elements which go to make up our bodies, and therefore to form the blood corpuscles out of which the various tissues are made, then indeed we must be content to have faded cheeks, flabby muscles, sunken eyes, weak backs, toothless gums, and bare scalps. Nor is it at all strange that what we have left is little more than a "bundle of nerves," since we have lavishly parted with all besides.

We deserve our fate, if we do not mend our ways.

WHEAT AND OTHER CEREALS.

Old mother earth has given to man the very thing he needs, to keep him in perfect health. First among these gifts are the golden grains; they contain in great abundance and well-suited proportions, those substances in *organic combination* that are required to build up the body, as its tissues are spent from day to day.

Nature furnishes us in the organic kingdom, not "proximate principles" as such; not fibrin, albumen, or casein; not starch, sugar, or fat; not chlorides, carbonates, or phosphates; these latter, if obtained from the food products, come only through *destructive* analysis. Out of her own ample storehouse she gives us those wonderful products of the soil suited for human food. Nor must we fail to note the fact, that it is *these*, untouched by the hand of the chemist, that are received and appropriated by animal organisms. Trees may grow and thrive upon inorganic foods—in the aqueous or gaseous form—but animals never. The human animal, in common with the others, would very soon starve to death on these substances. Neither will the *proximate principles* of food, support animal life; not even

if we select those that are strictly of organic origin, as starch, sugar, oil, fibrin, albumen, etc. The vital instincts reject those products that do not come directly from Nature's own laboratory.

The tables from Payen at the head of these chapters, will give a fair idea of the relative nutritive values of the different grains. It will be seen that the saccharine element is most abundant in rye, the fatty in maize and oats, and the starchy in rice ; we observe, moreover, that oats are rich in mineral or saline matter (good for teeth and bones), and also in nitrogenous substances.

The human body is known to be composed of some fifteen ultimate elements (the older authorities give thirteen), as shown by chemical analysis, all of which are supplied in common wheat. It is not strange, therefore, that this grain is a staple among food products throughout the civilized world, the fact being founded in the physiological *needs* of the human race. But it is strange, yes, marvelous, that this same wheat, which a beneficent Creator furnishes to our hand for the renewing of our bodies, should be largely stripped by man of its nutritive materials before he eats it. There is more than a grain of truth in the saying, that "the principal article of human food in America is a robbed, depreciated substance, incapable of sustaining human life." That "the human animal in America is drenched with starch" (in the use of white flour), "and destroyed by it." That "the ten thousand mills in America which are to-day engaged in pulverizing wheat, and sifting from it its gray matter," ought to be classed with the "distilleries of the land," as shorteners of human life ; and that the "extermination of the one is not more to be desired, than the annihilation of the other."

What stupidity (shall we call it madness?) that in the flour of commerce we should take away from the wheat—in a large degree, certainly—no less than twelve of the

fifteen elements that belong to it, and without which the growth of the human body can not be maintained! In other words, the wheat, with its fifteen elements, which are nearly or quite identical with those of the human body, is reduced for the most part to a white, starchy substance, containing only *three* of the ultimate elements, carbon, oxygen and hydrogen. The rich supplies of silica, sodium, sulphur, phosphorus, calcium, nitrogen, and other elements that are found in the bones, teeth, hair, nails, muscles, and in the blood, are gone! And the self-defrauded people, instinctively aware, as it were, that they are perishing for lack of those life-giving products, are now attempting to supplement the loss in a way that is none the less ridiculous and foolish. Vainly endeavoring to compensate for the things wasted, they betake themselves to the swallowing of certain substances which are little else than *proximate* elements or principles derived from the foods proper.

Why this roundabout process? Why separate these various substances from the grains, doing violence to their organic structures, and then eat them *individually* rather than take them in organic combination, as Nature has provided them? The idea is entertained by some, that in selecting and combining certain *parts* of the grains, a food can be prepared that will not only supply some special need in the system, but that it will afford nourishment to a particular organ or part of the body. Following this theory there are persons who delight to sup on cooked gluten, to eat wheaten, "diabetic bread," "brain food wafers," or any of the "food preparations," as they are called, rather than to take the food itself. Nor is it at all uncommon to see persons wet up wheat *bran*, coarse, flaky stuff, hardly fit for horses, and swallow it as a "medicine," and then sit down at meal-time, and eat white flour bread *in preference* to that made from the whole wheat! Any way but the right way; particularly if it be fashionable, or in seeming accord with the old-time custom of "taking something."

Coming fairly and squarely to the point, the truth of the whole matter is simply this: What is best suited to the nourishing or building up of the *body as a whole*, is also best adapted to the proper growth of its individual members. The late R. T. Trall, M.D., has very justly remarked that "Those who would prepare healthful food, and those who desire to 'eat to live,' should ever bear in mind that no one of the alimentary *principles* is capable in itself of properly nourishing the body. Neither of them, in the proper sense, is food, but merely a *constituent part* of food. And almost all the aliments or substances used for food, contain very nearly, and some of them quite all of these proximate elements. Hence the futility of all the multitudinous experiments, in feeding human beings or animals on a constituent part of an aliment, instead of the aliment itself. Such experiments only show the physiological ignorance of the experimenters."

Those constituent parts of food which are known to physiologists as proximate principles of the "second class" (oil, sugar, starch), are *purely of organic origin*. And the same is true of those of the third class, as fibrin, albumen, casein, etc. These two classes differ widely, both in their nature and origin, from those *inorganic* substances which are designated, proximate principles of the *first* class. The latter—most of them metallic—though obtainable by destructive analysis from organic products, are also found elsewhere, some of them existing largely in the surface of the earth.

Now, if the proximate elements of the second and third classes can be shown to be incapable of supporting animal life, what shall we say to those of the first class? If dogs starve to death on starch, sugar, oil, fibrin, etc., would they thrive well on chlorides, carbonates and phosphates? And yet there are people who do not hesitate to recommend even these. They imagine that if magnesia, sulphur, soda, etc., are lacking in the bones and other tissues, they can *eat*

magnesia, soda, sulphur, etc., or the carbonates, phosphates, etc., which contain them—quite ignoring the fact that these substances are simply earthy or inorganic materials, and as such, utterly incapable of supporting animal life. They seem not to understand that the only possible way in which human (or animal) beings can make these substances available, is to take them, not as inorganic matter, but fresh from the hand of Nature, as part and parcel of the food products, in a state of *perfect* organization—before the chemist has laid his finger upon them. It has been truthfully said, that where chemistry begins, organic life or structure ends.

If lime is a necessary constituent in our bones, we can easily supply the system with the needed “salts” by eating *wheat*, not lime, or other calcareous substances. If sulphur is required in the hair, we shall obtain it from the grains; not by taking the crude article. If sodium is called for in the formation of the different structures, let us look to the wheat and other cereals for that ingredient; not to soda, or chloride of sodium.

Had God or nature intended that we should eat inorganic substances, or even made it *possible for us to subsist upon them*, what need would there be to till the earth? If, like trees, we can live upon gases, or derive nourishment from phosphates, etc., why turn the furrow, or put in the seed? These materials abound in the crust of the earth, and are in no sense the products of agriculture. But why debate this question? It has been shown again and again, that so far from man's being able to subsist upon inorganic matter, neither he nor the lower animals can *get nourishment out of them*; they can only live upon the natural, *organic products* of the earth. It has been repeatedly demonstrated, that even those proximate principles which are strictly of organic origin, as oil, sugar, starch, fibrin, albumen, casein, etc., can not sustain animal life; both dogs and men would starve to

death on any one of them, or all of them put together. For example, wheat alone, with water (the latter as a carrier of nutrient material), will support human life for an indefinite length of time. But if we separate the wheat into gluten, starch, sugar, etc., and attempt to live upon these, with or without the water, certain death will in a few weeks or months repay us for our folly.

And yet, well as these facts are known among physiologists and scientists, people still persist in eating white flour bread, which is mostly starch, actually preferring it to bread made from the flour of the whole wheat! Really, is it not high time that we ceased to eat, and feed to our children, an article of food that dogs can not live upon?

In speaking of this subject, Dr. Trall remarks: "All of these proximate constituents vary exceedingly in their ability to sustain the prolonged nutrition of man or animals; but neither of them alone can supply perfect nutrition, nor sustain the organism for a great length of time. Their power to do so is in the ratio of their complexity. Thus, gluten, which combines in itself a greater number of elements, or in other words, is a more complex substance in its chemical composition than any other alimentary principle, is capable of sustaining the nutrition of animals longer than any other."

Dr. Graham is even more explicit on this important subject. He says: "Can any inorganic compound of oxygen, hydrogen, carbon and azote, be made to answer as a substitute for animal or vegetable food? Certainly not! And the reason is evidently not because any particular chemical character or property is wanting in such a compound, but because such a compound has not the constitutional nature which adapts it to the constitutional nature and functional powers of the living animal organs." He further adds: "A single pound of good wheat contains about ten ounces of farina, six drachms of gluten, and two drachms of sugar ;

and a robust laboring man may be healthfully sustained on one pound of good wheat per day, with pure water, for any length of time he chooses, without the least physiological inconvenience; but let him attempt to live on ten ounces of pure farina, six drachms of gluten, and two drachms of sugar per day, with pure water, either taken separately or mixed together, and he will soon find his appetite and strength and spirits failing, and his flesh forsaking him; and death will terminate his experiment in less than a year. Can chemistry tell us why this is so? Indeed she can not! But physiology tells us with promptitude and accuracy, that wheat, in its whole substance, is constitutionally adapted to the anatomical structure and physical powers of the alimentary organs of man; but that farina and gluten and sugar, in their concentrated forms, are not; and therefore that the wheat, while it affords healthful nourishment to the body, also sustains the organs in digesting and appropriating that nourishment; but that the farina, gluten and sugar, though purely nutrient principles, break down the alimentary organs, destroy their functional powers, and cause the whole system to perish."

Now, either Dr. Graham is correct in these statements, or he is not. If incorrect, it would be the easiest thing in the world to demonstrate the fact, by a few simple experiments upon dogs. If Dr. Graham is *right*, we ought to credit his statements, and have the benefit of his teachings.

What has been said in this connection in regard to wheat, is in nowise limited to that grain—it applies with more or less force to rye, oats, barley, and the grains in general. If we want the best that there is *in them*, we must neither reject nor destroy any of the nutritive substances which they contain. Even the woody fiber which forms the outer coating of the grain, when properly cleaned and cut sufficiently fine, serves its purpose in the intestinal canal—on the same principle that straw is needed for horses, when they are fed too

exclusively on oats or other grains. We need *bulk* as well as nutrition, in the foods we eat; were this not the case, what would be the use of all the varieties of fruits and vegetables, many of which, in one sense, serve to "fill up" with fluid or solid materials, rather than to supply large quantities of strictly nutritive substances? Indeed, we can scarcely commit a greater mistake than to *confine* ourselves to the use of the very nutritious or concentrated foods.

To present this whole theme in a nutshell, the reader is referred to the following chapter, which gives the testimony of Dr. Calvin Cutter, that well-known physiologist of Warren, Massachusetts.

WHEATEN VS. WHITE FLOUR.

The idea is sometimes entertained that bread made from wheaten meal (usually called Graham flour), is less nutritious than that made of the ordinary white flour; and that the persons who eat it are simply subjecting themselves to a "starvation diet," which does not support life properly. Let those who cherish such views read Dr. Cutter's statements, and then decide for themselves *which* of the two kinds of bread lacks the elements of nutrition that the system requires. First, however, let us hear, in a few words, what a well-known divine has to say.

Rev. J. F. Clymer, of Auburn, N. J., has given a discourse to his congregation on "Food and Morals," in which he goes straight to the *root of the matter*.* In speaking of the white flour of commerce, he says: "The process of bolting or refining takes from the wheat most of the phosphates and nitrates, the elements that are chiefly required for making nerves, muscles, bones, and brains. The phosphates and nitrates being removed by bolting, very little remains in the flour except the starchy carbonates, the heat and fat-

* This discourse has been published in pamphlet form, and is for sale by Fowler & Wells, New York.

producing elements. The use of fine flour bread as a staple article of food, introduces too much heat and fat-producing elements into the system; and where there is too much carbon or heating substance, it tends rather to provoke the system to unnatural and abnormal action, and instead of serving as an element to warm the body, its tendency is to burn or consume, heating and irritating all the organs—getting one into that state which is properly known as ‘hot-blooded.’

“The fine white flour ordinarily used has two-thirds of the nitrogenous and mineral nutriment that God put in the wheat, taken out. Unless these deficiencies are made up by some other foods, the exclusive use of fine flour bread will leave the nerves and bones poorly nourished, producing in some systems nervousness, dyspepsia, and all the physical ills that follow these diseases, together with impatience, fretfulness, and irritability. God intended that all the nutritive properties He put in the wheat should stay in it for purposes of symmetrical nourishment. Fine flour bread may be used for purposes of producing heat in the system, but it does not feed hungry nerves or starving bones.

“One reason why children fed chiefly on white bread feel hungry nearly all the time, and demand so much food between meals, is found in the fact that their bodies are insufficiently nourished. Their bones and nerves not receiving the nitrates and phosphates they need, are suffering from hunger.”

Now we will hear from Dr. Cutter. He says: “1. Flour is the only impoverished food used by mankind—impoverished by the withdrawal of the tegumentary portion of the wheat, leaving the internal, starchy or white portion. See the facts: In Johnson’s ‘How Crops Grow’ you find that in 1,000 parts of substance, wheat has an ash of 17.7 parts; flour has an ash of 4.1 parts—an impoverishment of over

three-fourths. Wheat has 8.2 parts phosphoric acid ; flour has 2.1 parts phosphoric acid—an impoverishment of about three-fourths. Wheat has 0.6 lime and 0.6 soda ; flour has 0.1 lime and 0.1 soda—an impoverishment of five-sixths each. Wheat has 1.5 sulphur ; flour has no sulphur. Wheat has sulphuric acid 0.5 ; flour has no sulphuric acid. Wheat has silica 0.3 ; flour has no silica.

“2. Flour is mostly starch—68.7 per cent. Its formula, chemical composition, is C 10, H 12, O 12—three elements ; carbon, hydrogen, oxygen. The human body contains at least twelve elements besides those of starch. How, then, can flour be nutritious with about three elements, when it should contain fifteen elements, in order to properly nourish and sustain the human body?

“3. Flour has less gluten than wheat. Gluten is the albuminoid principle corresponding to the albumen, fibrin, and gelatine in the human body.

“4. Dogs fed by Magendie (*vide* Kirke & Paget’s ‘Physiology’) on flour bread, died in forty days ; other dogs, fed on bread from whole-wheat meal or flour, flourished and throve. The three-fourths impoverishment of the mineral ingredients proved fatal to the first. Why should not mankind suffer in some manner from living on impoverished food?

“5. The history of the Roman Empire in the time of Julius Cæsar shows that wheat, as an article of food, combined with fresh outdoor-air life, is capable of producing and sustaining the highest type of physical manhood the world ever saw. The empire was built up and maintained by soldiers whose main article of food was wheat.

“6. There is every probability that the present prevalence of late erupting and easily-decaying teeth is due for one cause to the use of flour as food. In eight hundred and eighty of the school children in Woburn, Lexington, and Bedford, Massachusetts, in 1874, under twelve years of age,

two-thirds had decayed teeth. See 'Report State Health Board of Massachusetts, 1875.'

"7. There is every probability that the prevalence of premature grayness or baldness, is partly due to the present exclusive and universal use of white flour. Hair contains ten per cent. of sulphamid (NH_2S).—Mulder. But there is no sulphur or sulphuric acid in flour. A flour, to be food, must contain in proper quantities all ingredients found in the tissues, hair, teeth, etc. If it does not, then impairment of vigor, decay, and falling off must be expected as a natural consequence.

"8. Flour for half a century has been regarded as one cause of constipation. It has been proved that whole-wheat meal (or flour) regulates the bowels by giving the system nerve food to 'run,' so to speak, the digestive functions and promote healthy peristaltic motions. Nearly all our functions are sustained by nerve-force; hence the importance of having the nerves receive their full amount of phosphoric acid, which is the great pabulum of the nerve tissue.

"9. It is probable that the use of flour may be the cause of the change of the type of disease from strong (sthenic) to weak (asthenic).*

"10. Why should mankind, then, use flour and render themselves liable to disease, because flour is impoverished food? Remember Megendie's dog that died from eating

* "The mineral ingredients of food for plants, contained in fertilizers, if withdrawn seventy-five per cent., would entail vegetable growths of very feeble vitality and the resistance to the causes of disease. No farmer would think of manuring his vegetables with one-fourth the fertilizers ordinarily deemed necessary; or if he did, he would get a miserable and weak crop, if he got any at all. Now it is asked, May it not be possible that the present type of asthenic disease is partly due to the use of an impoverished food like flour? The answering of this must be made by the organized medical societies, although there is every probability that the reply will be in the affirmative."

white-flour bread exclusively! How can parents expect their children to grow up with strong teeth, nerves, eyes, hair, etc., on flour? In children every tissue and organ is growing, increasing in size, and developing. Every element which belongs to those tissues and organs should be contained in the food or alimentary substances, and in normal proportions, as provided by the Creator in the natural substances designed and proved by history to be perfect food. Wheat is such an article; but white flour made from it is a substance weakened, deteriorated, and impoverished; and history shows that people eating it are more subject to tissue-wasting disease (consumption, etc.) than ever before. Why, then, not use the whole of the original wheat, ground or reduced to a uniform condition, without loss or injury to the food elements, with its native normal balance of quantity of mineral ingredients in a soluble assimilable form, as Liebig and others advocate; and such as it is demonstrated undeniably and incontrovertibly, by facts of history, to be capable of producing the highest type of manhood the world ever saw? Why raise a pale, feeble, nervous, and small-sized race of people on flour because flour-bread looks white and light, and therefore is considered nice? What principle of æsthetics is it that confers such a pre-eminent place upon the color of white? Why not brown or bronze? What is more grateful to the senses than the complementary colors of landscape? If it were all white, it would be both repulsive and injurious. This preference of white over yellow or brown, or any other color, is not based upon the truth of existing facts, else it would be inferred that a white statue is preferable to a bronze. The fact is, the elevation of white bread into the highest place of preferment is altogether unfounded and unwarrantable. The white color comes from starch; and the whiter the bread the more starch it contains, and of course the less nutrition, as starch has only carbon, hydrogen, and oxygen to make tissue,

which would contain fifteen elements. The whiteness of flour is, in fact, an outward sign of the starvation and death within. Indeed, the present universal use of white flour is one of the most remarkable facts in the history of civilization—remarkable, because it is the only impoverished food upon the diet list. Over-boiled meats and vegetables are the only approach to impoverished food. People know enough not to eat them. But that they should love to eat white flour is certainly very remarkable indeed, and almost an evidence of a fallen nature, as there is nothing like it in the whole history of eating.

“11. What is wanted is a wholesome, healthful, nourishing wheat food—a whole-wheat flour in the fullest and broadest sense of the term—containing every one of the fifteen elements in their normal proportions, and reduced to an entire evenness of condition, which is most favorable to digestion and assimilation. It is a common practice, to a large extent, to grind the finest and soundest wheat into fine flour, and the poorest into what is called ‘Graham flour.’ This term ‘Graham flour’ ought no longer to be used; it is a kind of general name given to mixtures of bran, and poor and often spoilt flour, to a large extent unfit for human food. We must have a thoroughly pure, sweet, and nutritious whole-wheat flour, made from the choicest and ripest wheat, wholly (bran, or cortical portion, and all) reduced to a uniform fineness of quality, and well put up for family use; and whoever will give his earnest and honest efforts to furnishing such a flour, and keep its manufacture up to this high standard all the time, will confer a lasting benefit upon his race and generation, and find a remunerative market for all he can produce. The brown loaf is to our eye as handsome as the white, and in it we secure all the important nutritive principles which the Creator for wise reasons has stored up in wheat.”

As respects the relative values of white flour and that of

the whole wheat, the following table, if even proximately correct, ought to be of especial interest. It was submitted by a Mr. Johnson, some years ago in *Blackwood's Magazine* :

<i>In 1,000 lbs.</i>	<i>Whole Wheat.</i>	<i>Fine Flour.</i>
Muscular matter.....	156 lbs.	130 lbs.
Bones and saline matter.....	170 "	60 "
Fatty matter.....	28 "	20 "
	<hr/>	<hr/>
Total in each.....	354 "	210 "

THE FRUITS.

Fruits are almost as indispensable to a healthful dietary as the grains, particularly in the summer season, and in warm climates. They supply those delightful acids that are not only agreeable to the palate, but specially suited to the *needs* of the vital organism. They cool and refresh us in the heat of summer; they supply organic fluids to the system, replacing those that are lost in perspiration from day to day; and they keep the vital machinery in good working order. If no other proof were furnished of the natural requirements of the human system for fruits, a very broad hint is given in the fact that they are capable of being grown in nearly every quarter of the habitable globe; throughout the temperate zones, as well as the tropics, we find them in great abundance.

Another evidence in the same direction, is the fact that in the course of the season the different varieties of fruits follow each other in close succession, so that one is hardly gone till another is ready. And, as if to supply any *defect* that may arise from negligence on our part, or from climatic causes, one quarter of the globe supplements another to such a degree, that any local failure in the fruit crop is largely made up by an over-abundant yield in some neighboring locality. So that if apples fail us in the Middle States, they are directly shipped from the North; or if the supply from that quarter is short, there are peaches

and oranges in the South. And yet, how much more complete would this arrangement be, if the soil were so cultivated from year to year as to yield its *largest* product! Anything like a complete failure of the fruit crop, were such a thing possible in this country, would be nothing short of a great national calamity. Next to the grains, therefore, in dietetic importance, we must place the fruits; they minister alike to the pleasures of the appetite, and to the actual wants of our bodies.

The sour fruits, especially, are the best of "cholagogues," doing away with all need of "bilious remedies," so called; they stimulate the liver to its normal activity, and prevent that "clogging up" of the organ which causes retention of bile, thickening of the blood, and other derangements consequent upon non-performance of functional action. And it will be observed that those which have keen acids, come in great profusion just at the time we need them most; viz., after the long winter, when both fruits and vegetables are necessarily scarce.

Fruits are the natural correctives for disordered digestion; but the way in which many persons eat them, converts them into a curse rather than a blessing. Instead of being taken on an empty stomach, or in combination with simple grain preparations, as bread, they are eaten with oily foods, with meat and vegetables, pungent seasonings, or other unwholesome condiments; or they are taken at the *end* of the meal, after the stomach is already full, and perhaps the whole mass of food "washed down" with tea, coffee or other liquid; or they are eaten at all hours of the day; or late at night, with ice-cream, cake or other rich desserts; and a few hours after, when there is a sick patient, and the doctor has to be sent for, the innocent fruits get the blame of all the mischief, when really, their only sin was in being found in bad company.

Fruits, to do their *best* work, should be eaten either on an

empty stomach, or simply with bread—never with vegetables. In the morning, before the fast of the night has been broken, they are not only exceedingly refreshing, but they serve as a natural stimulus to the digestive organs. And to produce their fullest, finest effect, they should be ripe, sound, and every way of good quality; moreover, they should be *eaten raw*. What is better than a bunch of luscious grapes, or a plate of berries or cherries, on a summer morning the *first thing* on sitting down to breakfast? Or a fine ripe apple, rich and juicy, eaten in the same way? In our climate apples should constitute not the finishing, but the *beginning* of the meal, particularly the breakfast, for at least six months in the year; and fruits, raw or cooked, should make a *part* of the morning and evening meal (provided suppers are *eaten*), during the entire year.

The good effects that would follow the abundant use of fruits are often more than counterbalanced by the pernicious habit of completely saturating them with sugar. Very few fruits, if thoroughly ripe and at their *best*, require any sugar, particularly if eaten in the raw state; but unhappily it is a fact, that what was intended and prepared for us as a great good in the matter of diet, should be transformed into just the opposite. It is also a misfortune that people in this country should so habituate themselves to “sweet things” (foods prepared with sugar), that almost everything in the line of fruit acids “tastes sour”; so that what would otherwise be a pleasant acid flavor, must be covered with or cooked in sugar, before it can be relished.

The taste can be educated in this direction, as in its opposite, to an almost unlimited extent. This is seen in comparing the dietetic habits and tastes of the people of this country with those of Great Britain; the former use perhaps five times the amount of sugar that would suffice for the latter. And cooked fruits that are “plenty sweet” for an Englishman or Scotchman, would not be touched by

the average American without the saccharine condiment. It is worthy of remark, moreover, that those who are excessively fond of sweet fruits or condiments, rarely fail to call for the *intensely sour*, as lemons or pickles. This, indeed, is a necessary consequence; for when the liver is badly congested from the use of sugar, the vital instincts naturally call for the keen acids, in order to empty out the bile ducts, set them in good working order, and get rid of the *débris*.

Whoever can induce our people to turn their attention more largely to the cultivation of fruits, and then show them the necessity of making them a *staple* on their tables, to the exclusion of so much animal and fatty foods (particularly butter), will confer upon them an incalculable blessing. Such a change would save the lives of thousands of children—to say nothing of those of a larger growth—and it would make the ones that survive better *worth* the saving.

Many persons, with rather feeble digestive powers, can not manage raw fruits, as apples, at the evening meal; and some, who can eat them with impunity at the beginning of the breakfast or dinner, can not digest them well at the end of the meal. One reason for this is, that after taking warm food into the stomach, its nerves are to a certain degree relaxed, and that organ is no longer able to do its best work. And just here we have the explanation of another fact, viz., that if the meal is simply a cold lunch, raw fruit can generally be eaten at the beginning, middle, or end of it, without the slightest inconvenience.

Sylvester Graham, M.D., furnishes still another reason, which is probably a good one, why raw fruit is usually better digested in the earlier than the later hours of the day. He says: "But it should always be remembered that fruit of every description, if eaten at all, should be eaten as food, and not as mere pastime, or merely for the sake of gustatory enjoyment; and therefore it should, as a general rule, be eaten at the table, or constitute a portion of the regular

meal. I do not mean as the dessert of flesh-eaters, after they have eaten already enough of other food ; but I mean as a portion of the regular meal of vegetable-eaters, taken with their bread, instead of flesh and butter ; for their breakfast and their dinner, but more sparingly at their third meal or supper, especially if this meal be taken late in the day. The truth is, that all cooked food, even under the best regulations, impairs in some degree the power of the stomach to digest uncooked substances ; and therefore, so long as we are accustomed to cooked food of any kind, we must be somewhat more careful in regard to the times when we eat fruit and other substances in their natural state. The digestive organs always in health partake of the general vigor and freshness of the body, and always share with it also in its weariness and exhaustion. Hence, as a general rule, so long as we are accustomed to cooked food, the stomach will always digest fruit and other substances in their natural state better in the early than in the latter part of the day. Moreover, it is a truth of considerable importance, that fruit and other substances in the natural state are digested with more ease and comfort when taken alone, at a regular meal-time, than when taken with any kind of cooked food, except good bread. While, therefore, human beings, and especially in civilized life, wholly disregard these physiological principles, and eat fruit with anything and everything else, and at all hours of the day and night, they ought not to be surprised, and still less should they complain, if they suffer from their erroneous habits. But nothing is more certain than that if human beings will in a reasonable degree conform to the physiological laws of their nature, they may eat almost every variety of esculent fruits which the vegetable kingdom produces, with entire safety and comfort."

THE VEGETABLES.

Vegetables, while they must rank second as compared with fruits, have a greater value, dietetically considered, than is generally accorded to them. In the first place, they give *bulk* to our food, which is a matter of more importance than is commonly supposed; and in the next place, they furnish a large amount of organic *fluids*, which are digested and assimilated by the system. It is a mistaken idea which some persons have, that those foods are necessarily best which contain a large amount of nutrition in *small bulk*. They seem to forget that food, to be properly digested and appropriated by the organism, must contain something *more* than the mere nutritive particles; there must be certain indigestible materials supplied to the intestinal canal, else the bowels, having little to do, would lose their natural tone, and shrivel up, as it were, from mere inactivity. This is what actually happens, to a certain degree, when persons live too exclusively on white crackers, or fine flour bread, and other highly concentrated forms of food.

G. Schlickeysen, a German writer, in treating of this subject, says: "The value of the various articles of food consists not, as is generally supposed, in their chemical constituents, but in a variety of other conditions, which we shall here mention. In the first place, the food must contain the necessary amount of water to maintain the excretory processes through the breath, perspiration, and otherwise. Fruits contain an abundant supply of water, so that when they are eaten freely the drinking of water is almost entirely unnecessary; and the vegetarians are really justifiable when they say, 'We drink fruit'; and they might also add, 'We eat water.'"

Horses, it is well known, can not live exclusively on grains; they need straw as well—and even wood-shavings have been successfully substituted when straw could not be

had.* On the same principle, if not to the same extent, human beings thrive best on a diet that contains a certain per cent. of coarse material. For example, the grains, as wheat, rye, etc., which are excellent in themselves, are not the best by themselves.

Nor must we overlook the fact that our bodies are made up of both fluids and solids—about one-fourth of the latter to three-fourths of the former; or, as some one has stated it, in rather general terms, the human body is so many pounds of salts, etc., and a “few pailfuls of water.” Now, when we consider that the fluids of the body are the first to waste, either in sickness or health, it will be seen that in order to supply that waste, liquids as well as solids are required in the food. The potato, which is 75 per cent. water, and which many call *poor* in nutritive value, will of itself sustain life for an indefinite length of time. Indeed, if we had to choose a single article, and live on it exclusively, the potato would come nearer meeting the wants of the system, so far as its *fluids* are concerned, than the grains, which contain so large a proportion of solid matter. Pavy, in his treatise on Food and Dietetics, very justly

* The following paragraph is from Dr. Graham's “Science of Human Life”:

“About thirty years ago,” says Governor William King, of Maine, “I went to the West Indies, and during my voyage became acquainted with the following fact, which may be relied on as strictly true. A vessel from New England, with a deck load of horses, bound to the West Indies, was overtaken by a violent gale, which swept away all the hay on board, and carried away the masts. The captain was obliged to feed his horses on corn. After a while they began to droop and to lose their appetite, and at length wholly refused to eat their grain, and began to gnaw the scartlings and spars within their reach, and to bite at the men, and everything else that came in their way. The captain threw pieces of wood before them, which they immediately began to eat. After this, he regularly supplied them with a quantity of cedar shingles, which they eagerly ate as they would hay, and soon recovered their appetite for their grain, and improved in health and sprightliness, and continued to do well on their food of corn and cedar shingles till they got into port.”

remarks that, physiologically, "the separation of the ingesta into 'food' and 'drink' is unsuitable; that the two factors of life are *food and air*"; and that the former "embraces both solid and liquid matter."

It is, indeed, a nice point to determine just what proportion of our food should be fluid and what solid, to say nothing of the indigestible matter, as bran in wheat, which is necessary to the normal or healthy action of the intestinal canal. One thing is certain: in warm weather, when there is much waste of the fluids of the body through the skin, the supply of liquid material must be correspondingly large. Here is where the juicy fruits, and even the *vegetables*, supply a great want in the vital economy; they give us a large amount of fluid matter, in an organized state. Indeed, we have a most beneficent arrangement in the relation of supply and demand; when our needs are greatest and most urgent, the stock of supplies from Nature's storehouse is most abundant.

In the early spring, when we have grown tired of "last year's leavings," the tender vegetables fill our markets and delight our eyes in glad anticipation of a change in the repast. The young beets, the spinach and asparagus, the early cauliflower, and even the lettuce and onions, have charms for us then. As summer draws nigh, the varieties of choice vegetables multiply, giving us green peas, tomatoes, string beans, summer squashes, and an almost endless variety of products. Then come the autumn days, and with them the great Lima beans, the Hubbard squashes, and the sweet potatoes. Nor does the supply fail us when winter approaches; there are still turnips, potatoes, cabbage, winter squashes, and other good things. Really, it is little less than wonderful what varieties of vegetable products there are, even in a single latitude or climate.

Another feature in regard to vegetable foods, is the strong *contrast* that exists in the flavors of the several products.

There are "families," it is true, the members of which show their kinship by a similarity of flavor and texture ; but outside of these the differences or individualities are strongly marked. For example, what is more unlike in appearance and taste than a cabbage and a sweet potato, or a beet and a butter bean ?

Some of these vegetables are of less value as foods than others, their dietetic importance seeming to consist more in the *individual constituent* that is added to the general food product, than to the merit that belongs to them separately considered. To illustrate : common lettuce does not seem to possess any extraordinary dietetic properties ; but after a long winter, when everybody has tired of bread, beans and potatoes, to say nothing of "beef, mutton and ham," a fresh bunch of tender lettuce with a dressing of lemon juice, is to most persons really inviting. So is a dish of young peas, cauliflower or spinach. Something *green* is wanted after the old sameness of dry dishes, and it would be a great misfortune if, for even one season, the gardens should fail us.

Vegetables and fruits are so unlike in their individual flavors and characteristics, that they should not, as a rule, be eaten together, or at the same meal. A good plan is to confine the vegetables to the noon-day repast, letting the morning and evening meal be made of fruits and cereals variously prepared. Ordinarily, these latter are quite sufficient for breakfast, though a dish of baked potatoes would not be a bad accompaniment. The potato is so unobtrusive in its nature, that it rarely creates disturbance eaten with any other food. Like the grains, it "goes well" with either fruits or vegetables, and it is about the only vegetable of which as much can be said. Not that well people, who scarcely know they *have* a stomach, might not manage a meal very well with miscellaneous combinations, but feeble stomachs must either discriminate, or suffer. For a fuller

elucidation of this subject, the reader is referred to the chapter on Food Combinations.

MEAT AS AN ARTICLE OF DIET.

The flesh of healthy animals, as beef or mutton, is neither the best nor the worst of foods. In actual nutritive value, so far as either quality or quantity of nutrient material is concerned, the grains will always stand at the head of the food products. In respect to variety, we have but to add to these the various fruits and vegetables, each in its season and in its highest state of culture, and we have, as many believe, all, and the *best*, that is needed for the sustenance of our bodies. But such are the customs in modern cookery, and such the arts and inventions of civilized life, that these things, naturally good, are often transformed into anything but wholesome foods. It is, therefore, a common remark, made even by those who do not approve of eating the flesh of animals, that meats, prepared in a plain way, are far less injurious than many other articles that are often found on our tables; such, for example, as fine flour bread, ordinary cake, pickles, pungent sauces, preserves, jellies, the usual pastries, etc., etc. At the same time the question remains, whether any of the meat dishes can *begin to compare* with a fruit and bread diet (using bread made from the flour of the whole wheat), either in nutritive value, or in respect to health.

In the first place, every particle of animal flesh (including the human), is, to a certain extent, laden with effete, worn-out material that is making its way out of the vital domain. It is that *kind* of material out of which are formed the bile, perspiration, and other excretory products, the bare mention of which would be unsuitable in a work of this kind. These products are the results of a transformation in the downward grade—sometimes called *destructive assimilation*—by which the ingredients of the animal tissues are

decomposed, and converted into waste substances. In the language of the physiologist, they represent the "physiological detritis of the animal organism." Every drop of venous blood is laden with it ; so much so, that if an animal is not well bled when it is killed, the meat is actually poisoned by it.

It is the presence of these waste products in meat, that renders it so quickly putrescent after life is extinct—*unless* some antiseptic is employed, which shall so change the nature of the meat itself as to render it no longer the same, even in nutritive value. It is the presence of these that causes the *chyle* formed from a diet of meat, and taken from the living vessels, to putrefy in a few hours ; while that which is elaborated from grains and other vegetable products, will keep for weeks with no material change. It is due to the presence of these that the perspiration, and indeed all the excretions of meat-eaters, are more offensive than those of persons living upon fruits and grains, and other products of the soil. And just here we have an explanation of the fact that the flesh of most carnivorous animals is so disgustingly filthy and putrescent, that it is utterly unfit for human food. Their bodies are filled with this waste matter, working its way a *second time* out of the domain of animal life, and this time laden with still another portion of "physiological detritis."

Persons who live upon animal foods have need to pay special attention to bathing, change of underwear, and other habits of cleanliness, else their very presence will reveal the character of the materials out of which their tissues are made. This is particularly true in the case of individuals whose sedentary habits prevent them from throwing off the waste matters fast enough to keep the body in a pure, wholesome condition.

But there are reasons of a *moral* nature why meat is no the proper food for man. The habit of murdering animal

is of itself degrading; even beef-loving England will not, it is said, allow a butcher to serve on a jury, particularly if the case to be tried is one involving human life. One of the foulest murders that ever disgraced a peaceful community, was committed some years ago in Ohio, by a man (supposed by his neighbors to be a peaceable citizen) who had spent the day in killing hogs; he pursued his victim, a young woman, to the village church-yard, and there stabbed her with the very knife with which he had cut the throats of the swine.

As to the actual necessity for a meat diet, it is not true, as some suppose, that vigorous health can not be maintained without it. On the contrary, "four-tenths of the human race," according to Virey, subsist exclusively on a vegetable diet, and as many as seven-tenths are practically vegetarians.*

Then, there is an argument outside of physiology—one that sooner or later will have to be considered—why the flesh of animals should not form a part of the diet of human beings. At the present rate of increase of the human family, the surface of the earth will, in a few centuries, be far too densely populated to admit of the raising of animals to be used as food. For it has been shown that it would require more than forty times as much land to feed a man on meat, as it would to feed him on grains.† It follows, therefore, that when land is scarce, as it will be when the earth is many times more thickly populated than at present, the acres will have to be utilized in the way that is most profitable; not in the raising of hogs, cattle and sheep, but in the cultivation of grains, and other products of the soil.

Returning to the sanitary argument against the use of

* See "Physical Education," by Felix L. Oswald, M.D., published by D. Appleton & Co.

† See essay on "The Influence of Food on Civilization," by Richard A. Proctor, in the *North American Review* for December, 1882.

animal foods, it is proper to remark that so long as there are persons who, from life-long habit or otherwise, think they "must have it," they should at all events *beware of diseased meats*. The cattle that are shipped into New York for the market, have many of them come hundreds of miles in ill-ventilated cars, often in hot weather, and are stowed into them almost as closely as they can stand; here they are surrounded with a stifling, filthy atmosphere, and frequently they have not a drop of water on the whole journey. A large per cent. are disabled from being tramped underfoot; and by the time they reach the city some of them are sick or dying with typhoid or other putrid fevers, and all are in such a feverish condition that their bodies are poisoned, through and through.

Nor must it be forgotten that all stall-fed or sty-fed animals are, to a certain extent, diseased; in fact, the fattening process is of itself nothing more nor less than the progress of disease. When an animal ceases to take exercise, as in a stall, it also ceases to throw off excretory matter promptly; its liver becomes engorged, the lungs are pressed upon, the blood can not be properly aerated, and loads of carbon retained excretion) in the shape of *fat*, are impacted between the once healthy muscles, which are now every day getting smaller and smaller. Fat people, as well as fat animals, have small, weak muscles—a fact well understood by the medical student.

The presence of certain parasites in animal foods, is another strong objection to their use. It is a well-known fact that the ova of trichinæ are taken into the human system by eating pork, and especially raw pork; and it has been questioned whether any *moderate* degree of heat would be sufficient to kill them. It is also perfectly well known that the larvæ of the tapeworm may exist in oxen, sheep and swine; and that those who eat of the flesh of these ani-

mals, particularly if it be not well cooked, are more or less exposed to the tapeworm malady.*

Animals that are to be eaten should be fed on the cleanest of food, and should have plenty of pure water to drink; they should never be kept in confined places, or with filthy surroundings. In fact, they need at least a ten-acre field to run in, and get plenty of exercise and fresh air, as well as fresh grass. "But how can they have this," you ask, "when the country becomes densely populated, all through? It will take more room for the animals, than the people have for themselves and their children." Very true; and when this is the case, the people will then be obliged to live upon fruits and grains, and the products of the garden, which will be infinitely better for them. Meat is an expensive diet, every way you take it; but the expense in actual dollars and cents, is the least part of it. Used three times a day, as it is by very many of our people, it is anything but health-producing; and the doctors' bills often exceed those at the meat market—to say nothing of the time lost, the suffering endured, and the actual impairment of the general health.

It is the duty of the butcher, as well as of those who purchase the meat, to see that no animal is killed in an angered condition, as the blood is actually poisoned by the mental excitement thus produced. Neither should it be overheated by running; this sends the blood to the capillaries; and the flesh which is filled with it is not only much darker from the superabundance of venous blood, but the meat is rendered putrescent by it. Butchers have sometimes been obliged to throw away a whole beef, from its having been killed after severe racing; the flesh being not only unfit to eat, but commencing to putrefy very soon after life was extinct.

* See lecture on "Worms," by F. Spencer Cobbold, M.D., published in London, in 1872.

It will readily be seen, by glancing at the tables given at the head of these chapters, that all meats fall far below the grains in nutritive value. Some of the field vegetables, as sweet and Irish potatoes, artichokes and winter squashes, contain nearly or quite as much solid matter as meat, and considerably more than milk; while beans, peas and lentils contain about three times as much as ordinary meat.

Some years ago, great importance was attached to the fact that meats contain a large per cent. of nitrogenous substances, these being considered by Liebig and others as highly essential to the production of muscular force. This theory, however plausible, has of later years been disproved by able authorities, as Frankland, Traube and others. Indeed, Liebig himself, who was the originator of the doctrine, has abandoned it altogether. In like manner, other pet theories, as what were supposed to be the "elements of respiration," the "heat-forming principles," etc., have fallen to the ground, or at least lost much of their former significance. The more rational view is now somewhat favorably entertained, that whatever is best suited to the building up of the various structures of the body, or in other words, is capable of *replacing* that which is lost, must necessarily be productive of vital heat and vital force, these being generated in the *normal quantity*. The late R. T. Trall, M.D., in speaking of the doctrine advanced by Liebig, remarks: "The theory has no practical value in dietetics, for the reason that all the elements of nutrition, whether heat-forming, or flesh-forming, or bone-forming, are sufficiently distributed, and nearly equally so, throughout all those portions of both the vegetable and animal kingdom that man ever does or can employ as food."

All domestic animals, either from the ignorance or negligence of those who keep them, or from other causes, are liable to be diseased; this is particularly true in those stock-raising districts that are adjacent to cities. The animals are

largely swill-fed from breweries ; and owing to the increased value of land in these vicinities, they have less territory to roam over or feed upon. By a careful perusal of the Reports made to the Department of Agriculture at Washington, it is easy to arrive at the following facts, viz. : That all domestic animals, as horses, cattle, hogs, sheep, and even poultry, are subject to disease, those in some localities being freer from it than others. That next to hogs, fowls are most liable to be affected. That there are various diseases among hogs, the most fatal being that of hog-cholera. That the mortality from this cause alone is enormous, some counties in certain of the States losing as high as 80 per cent. per annum. That the value of farm animals lost to the United States in a single year (1879) exceeded \$16,000,000. That about two-thirds of this loss was due to diseases among swine. That these diseases prevailed more extensively in the Middle, Southern and Western States than in the Northern or Eastern. Improper food, insufficient housing, and lack of *clean surroundings*, seem to be the chief causes of disease among animals.

PORK-EATING.

If there is a practice in all Christendom that deserves the censure of this enlightened age, it is that of eating swine's flesh. Away back in the twilight of the ages, before Christianity had been dreamed of, there were people upon the earth who, for sanitary reasons, if for no other, declined to touch the unclean thing.

But we, who live in the light of the nineteenth century, who boast of our refinement, our intuitive perceptions, and our clear-headed forethought, who have all the wisdom of the centuries behind us,—*we* do not hesitate to take into our stomachs that which the Hebrew shoved from his table thousands of years ago, banishing its very presence by the strong arm of the law. We, forsooth, are a wise people!

What care we for certain legal enactments enforced by the Jewish leader, far back in history? True, our children die of scrofula, entire families having often been swept off with consumption; erysipelas appears in divers forms, and diphtheria (the legitimate result of foul feeding or foul air) is growing more and more common every year. Not only so; there are every now and then sudden and almost tragic deaths from trichinosis, whole families being the victims. But so far, these things fail to alarm us; and though statistics show that diseases are multiplying among the swine themselves, killing them annually by the hundreds of thousands, we take comparatively little heed. Of the twenty million dollars' worth of hogs in the United States that were sick in 1877, about 59 per cent. died. *Has any one thought to inquire what became of the 41 per cent. that recovered?*

If, in the olden time, swine's flesh in its normal condition was not fit for a Jew, can we, in these days, make that which has survived the ravages of hog-cholera, hog-fever, etc., suitable for a Christian? It is said that Dr. Adam Clarke—who evidently had an antipathy to pork-eating—having once been called upon to say grace at a barbecue, bowed his head reverently, and uttered these words: "O Lord, if Thou canst bless under the Gospel what Thou didst curse under the law, do Thou bless this pig."

The hog is a scavenger by nature, and by practice; it is his proper mission on this earth, not to be eaten, but to eat up that which the nobler animals disdain to touch. Indeed, he adapts himself to circumstances, devouring whatever comes in his way. He is equally well pleased with the clean ears of corn, or the seething contents of the swill-pail; he will dine on live chickens, or devour carrion. Nothing is too fine or too foul to suit his indiscriminating palate; he has been called "the scavenger-in-chief of all the back-boned animals." Truly he is *omnivorous*. And yet, bad as the hog is, it is not absolutely impossible to improve his condition.

Put him where he can not get refuse matter, where he will have only nuts, grains, etc., to feed upon, and he will readily conform, for the time being, to his better surroundings; and in process of time his flesh would be improved in quality. But his *nature* no man can change; give him his former haunts, and he will at once fall into his old ways. You can not *educate* him.

Will any one give a reason why intelligent people should eat him, and from *choice*? If we *must* dine on our fellow-creatures below us, are there not decent, clean-feeding animals, as the ox, and the sheep, that we could take in preference?

In a sanitary point of view the condition of the hog, in *his best estate*, is not flattering. His scurvy hide (which is perhaps the cleanest part of him), his foul breath, and his filthy feeding habits—are not these enough to bar him from our tables? Or must we wait for such logical sequence as is sure to follow the violation of physiological law? Wait till diseases are multiplied in kind, and intensified in character, till we are fairly *driven* from the no longer questionable provender? Wait till our nearest friend is stricken with supposed typhoid fever, and dead of veritable trichinosis? There can be no doubt that many persons have sickened and a number died, of what was thought to be typhoid fever, when really the disease was due to the presence of these parasites (the trichinæ)* in the system; for the symptoms in the two diseases are quite similar.

As stated in the last chapter, one of the principal objections to the use of animal flesh as food, is the fact that it is filled with the *débris* of the vital organism, working its way through the capillaries into the various excretions, and out of the domain of life. Now, if this effete matter is objectionable, even in clean-feeding animals, what must be its

* Trichinæ are said to be found in the ox and sheep, as well as in the hog.

condition as it is thrown off from the tissues of scavengers? And what the nature of the tissues themselves, when they are not only made out of, and nourished by a diet of garbage, but are thoroughly saturated with the almost putrescent matters with which the venous blood is laden? It is a fact which we seem rather slow to recognize, that the *quality* of all animal tissues *partakes of the character of the materials out of which they are made*. In other words, if we expect sound bodies with good firm tissues, we must look to the nature of the food we eat.

Animal foods, of all others, should, if eaten, be selected with the utmost care; the animals themselves should be well fed, well housed in winter, and allowed to graze from open pastures in summer. No animal or fowl should ever be stall-fed, or sty-fed; and none with carnivorous or omnivorous habits, should be used as food. The creature whose characteristics we are at present discussing, combines in his personality too many bad qualities to give him a *decent* passport to our tables. He is of low organization, and naturally filthy in his habits; he is desperately foul in his feeding, is often kept and fattened in a close, dirty pig-sty, and as might be expected, he is specially subject to disease.* And yet the hog is found in every market in this country, and in Europe; though recently the German and Austrian markets have forbidden *American* pork; and other nations, it is said, have the matter under advisement.

Nor must it be supposed for a moment that the use of pork is at all limited to the few, or to the *very poor* among our people. There is scarcely one family in twenty that does not partake of it in one form or another. The hams, the shoulders, the side-meat, the pickled souse (head-cheese),

* Dr. Jas. C. Jackson makes the statement based, he says, on information derived from the pork-dealers of Cincinnati, Ohio, that "ninety-five hogs in one hundred have *ulcers* on their livers from the size of an ounce bullet to a hen's egg."

the stuffed sausages—every part is in demand. Pickled pigs' feet are considered a rare delicacy; and hogs' brains make another "dainty dish." But it is left for the very *bon-ton* of society to sit down to what is called beef *à-la-mode*; which is simply a beef roast plugged full of fat pork, along with innumerable spices, etc.

Nor is it enough that we devour the several parts of the animal, even to his liver and kidneys; we strip the intestines of their fat, melt it down, and use it in the form of lard. This latter is the very quintessence of the swine; it is the diseased product of all his filthy feeding; and it is *this* article that forms a staple in almost every American family. It shortens the biscuits, the plain cakes, and the pastries; and it even finds its way into the loaf bread! It oils the bake-pans, it fries the drop-cakes, the doughnuts, the Saratoga potatoes, and all the other "fried things," or nearly all. In short, there is neither breakfast, dinner nor supper without it, in some form or other.

Do the people wonder that they are afflicted with scrofula; and that it crops out, full-fledged, in a single generation? Oh for a Moses among the Gentiles, to forbid them, by legal enactment, the use of this vile thing, swine's flesh!

The late R. T. Trall, M.D., in discussing the quality of animal foods in his *Hydropathic Encyclopedia*, says: "Of the hog, whose filthy carcass is converted into a mass of disease by the ordinary fattening process, I need only express my abhorrence. Although swine's flesh and grease, under the names of *pork* and *lard*, are staple and favorite articles of food throughout Christendom, common observation has long since traced the prevalence of scrofula, erysipelas, and a variety of glandular and eruptive diseases resulting from impure blood, to their general employment. If there are any animals which should be exterminated from the earth, mad dogs and fatted hogs are among them."

MILK.

Many persons who discard meat, do not hesitate to partake freely of milk, eggs, sugar, butter, etc., and to use pastries, cakes and puddings, that are little else than a combination of these, with the addition, it may be, of spices and other seasonings. Now, a plain diet of Graham bread with beef or mutton, roasted or boiled, and a fair allowance of fruits and vegetables, would be much more wholesome than the above articles, or the dishes that are manufactured out of them.

As to milk, it is the natural diet *for the young*. But for grown persons, and especially for those who live in cities, or who incline to sedentary habits, it is not the best, or *one* of the best articles of diet. Before arguing the question, however, let us make a note of the fact that milk is one of those secretions that is readily affected, not only by the food the animal eats, but by the conditions, physical or mental, of the creature itself. If the health of the cow deviates from the normal standard, the character of the milk is immediately changed; if she is mentally disturbed, as by anger or fright, the mammary glands will secrete, not a wholesome, but a poisonous fluid. A mother not unfrequently kills her child, or throws it into spasms, by nursing it after she has been badly frightened, or after a violent fit of anger; and many a child has been "salivated, purged and narcotized, by mercury, drastic purgatives and opiates, respectively administered to the mother."*

But the question is asked, "Suppose the animal is kept in the best possible condition, every way; would milk be objected to as an article of diet?" Most assuredly not—for young calves. Nature has provided the very food that is needed, for all her babes. The milk of the cow, like that of other mammals, including the human, is intended for the

* Pavy's "Food and Dietetics."

nourishment of the infant; and as soon as the calf is able to take more solid food, the maternal supplies, where nature is not perverted, are dried up. But the unnatural practice of milking cows has distended the milk glands, and thus converted them, in a large measure, into depurating organs; and the milk supply is not only increased, but *prolonged* beyond the period that nature intended. Add to this the improper foods, as swill-feeding, the confined air, and other unhealthful conditions with which the animal is surrounded, particularly in large cities, and we have not only a prolific source of disease, but an explanation, in part at least, of the enormous death-rate among young children; this, it will be noticed, is always largest in cities, where the milk used is poorer in quality than country milk.

But returning to the direct question, suppose we have the *best* of milk, from perfectly healthy cows, what is the real objection to its use? To this question there are two answers; the first is founded on experience, and may be stated as follows: It is the almost universal testimony of persons of sedentary habits, dark complexions and "bilious temperaments," that milk, even of good quality, does not agree with them; and where there is torpor of the liver, or other dyspeptic conditions, it usually causes distress. The reason of this will directly appear. As already stated (and herein is the *second* answer), milk is designed by nature for the young of all mammals; it contains a small per cent. of solid substances, but *enough* for the needs of the infant; and these substances are just the elements, and in the *right proportions*, to make those soft, fatty tissues which the little creature needs for the protection of its small bones and delicate organs. As the child or young animal grows, and the teeth develop, other and more solid materials should take the place of the milk; this change must, of course, be gradual. Many mothers do their babes harm, and in fact make them sick, by giving them solid food before they are

able to masticate it properly. And no less detriment is done to the full-grown child, when we give him an aliment that requires *no* mastication with the teeth, and which is designed only to make soft, "baby tissue." Such food is now needed as will make good, firm muscles, sinewy tendons, strong bones, and all the other tissues that belong to the adult man or woman.

"But how about cream?" Well, cream, if used to the same extent, would perhaps be more injurious than milk; it contains an abundance of fatty material, and if habitually taken is a prolific cause of biliousness. Young children that are fed largely upon cream—or butter, or meat, particularly fat meat—become gross and plethoric, and are apt to break out with boils, or "scald-head"; or if a nursing mother uses these articles to excess, her child will suffer in consequence. Ordinarily, cream does less harm than milk, from the simple fact that it is served in a very limited quantity; that is, as a *condiment*, rather than a beverage; and it is less employed than milk, even as a mixing material in breads, puddings, etc. For grains, mushes, plain puddings, etc., the juices of fruits make a far more wholesome dressing than cream; and were we in the habit of using fruits in this way, the palate would not only tolerate readily the new combination, but we should come to like it.

Milk, if used, should be taken, not as a beverage, but as a condiment, and then very sparingly, particularly by those persons who live in cities and whose work is indoors and of a sedentary character; while invalids, as a rule, would certainly be better without it.

BUTTER AND EGGS.

If we dispense with milk—that is, leave it to the calf, for whom nature intended it—there will, of necessity, be no butter; and, in a sanitary point of view, the absence of it would perhaps be no great loss, it being by no means as

wholesome an article of diet as either milk or cream. Like other oils, it is, to a certain degree, indigestible ; not that it gives a "pain in the stomach," as a general thing, but it does not enter into those vital changes which are necessary to convert food into chyle proper. It *mixes* with the pancreatic juice in the form of an *emulsion* simply, and goes into the blood in that crude condition ; and being carried through the system by the capillaries, it is deposited *as fat* in the various tissues, and largely in the skin. From the very nature of its constituents, butter has little nutritive value in it ; it usually contains 3 to 5 per cent. of casein (due to the presence of milk), and about twice that amount of water ; the other substances are oils, fixed and volatile. These readily decompose on exposure to the atmosphere, and butyric and other fat acids are set free.

Persons who live largely upon butter emit a strong odor from the skin, very perceptible to those who do not use animal foods. The salt which has to be mixed with it to make it "keep," is not, to the hygienist, a desirable addition, for reasons which will hereafter be stated. Pereira says : "Fixed oil or fat is more difficult of digestion, and more obnoxious to the stomach, than any other alimentary principle. Indeed, in some more or less obvious or concealed form, I believe it will be found the offending ingredient in nine-tenths of the dishes which disturb weak stomachs. Many dyspeptics who have most religiously avoided the use of oil or fat in its obvious or ordinary state (*as fat meat, marrow, butter and oil*), unwittingly employ it in some more concealed form, and as I have frequently witnessed, have suffered therefrom. Such individuals should eschew the *yolks of eggs, livers* (of quadrupeds, poultry and fish), and *brains*, all of which abound in oily matter. *Milk*, and especially *cream*, disagrees with many persons, or, as they term it, 'lies heavy at the stomach,' in consequence of the butter it contains. *Rich cheese*, likewise, contains butter, and on that account is apt to disturb the stomach."

Schlickeysen, in speaking of the use of butter, eggs and cheese, remarks: "These cause an excess of fat in the system, and an offensive, slimy condition of the mucous secretions in the mouth and nose, quite apparent to those who, contrary to their usual habit, eat of them. Their effects are often apparent also in eruptions upon the skin, especially upon the face."

Eggs are pretty generally conceded to be a "bilious diet"; and if eaten freely at each meal for a few weeks, the whites of the eyes usually show the presence of bile. The albumen (whites of the eggs) cooked soft, would be less objectionable than the yolks, which contain about 30 per cent. of oil. If eggs are eaten they should be fresh, their use not too frequent, and confined to cool weather. The fowls should be allowed plenty of clean territory to roam over, and an abundance of fresh water, pure air, and good grains. Unfortunately, the habits of the bird are none the cleanest; it will pick up and eat almost anything that comes in its way. This is why country eggs and country fowls (provided there are good and healthful surroundings), are always to be preferred. In towns and cities, the chickens are necessarily confined to the house and yard; whereas, in the country they have access to the open fields, and feed largely on grains.

Persons who are subject to torpor of the liver, would do well to refrain from the use of either eggs or butter; and those who have *sound* livers—and desire to keep them so—can take a hint.

SUGAR.

Hygienists have no objection to the use of saccharine matter, all that the vital economy requires, provided it is taken in the natural way; that is, in *organic combination*, with the other food principles,—not separated as a proximate element. In other words, the saccharine substances con-

tained in fruits, grains and vegetables, are thoroughly wholesome, so long as we get them simply by eating these natural products. But when we separate them into starch, sugar, oil and the other proximate principles, and think to take these as foods proper, or in combination with them, we make a serious mistake. And were we to reduce *all* our foods to their proximate elements, and then try the experiment of living upon them, we should in the end meet the fate of "Megendie's dog."

"But," say you, "we do not wish to *confine* ourselves to these things—the proximate elements—we only desire to use them in combination with other substances." Very true; but the point is just here: if the proximate elements, taken *collectively* (after they have once been separated from the alimentary substances to which they belong), are incapable of supporting animal life, then they must be worthless individually, no matter how small the quantity in which we use them. If the proximate principles of food, combine them as we may with each other, lead to certain death, then it is plain that we must look for sustenance, not from these, but to those organized materials known to be *capable of replacing the wasted tissues*. And if any one desires a test in this matter, let him try the experiment of making, say *half* his meals for three weeks, provided he can hold out so long, out of as many of the proximate principles of food as he may select, and see how he thrives during that period. Before the time is one-quarter expired he will be tired enough of starch, sugar, oil, fibrin, albumen, casein, etc., and he will long for the foods proper, in undisturbed organic combination, in place of the miserable trash which he has been attempting to live upon.

Since, then, these proximate principles can not support animal life, may we not reasonably expect that any considerable proportion of one or more of them, taken habitually with the food, would produce abnormal conditions of the

body? What are the facts in the case? Take, if you please, the article under consideration, viz., sugar; and let us select the pure white crystals, in order to have as little organized or extraneous matter in it as possible. Try taking a heaping tablespoonful of this each night on going to bed; and if you wish, you may repeat the "dose" in the morning on rising. How long, think you, will it require to create a "bad taste" in the mouth, cause soreness in the liver, and constipation of the bowels? *Try it.* A teaspoonful of white sugar put into enough milk or water to dissolve it, and given to a young babe, the quantity being repeated two or three times each day, would very soon derange its digestion, causing severe constipation.

Another experiment easily tried, is to double or treble the amount of sugar usually taken in the food, and note its effects. It will be seen that the increased quantity creates thirst, or in other words, slight inflammation of the mucous surfaces of the alimentary canal; and if the digestion is ordinarily none too good, the sugar will most likely cause headache, and other symptoms of indigestion.

Now, any substance that can not be taken habitually, in the small quantity of say half a gill—not even on an empty stomach—without causing abnormal conditions of the body, must, to say the least, be set down as of little value, dietetically considered; and it is pretty safe to conclude that the less one uses of such an article, the better. No family of ordinary size can consume "barrels of sugar" in a year, nor half barrels, without detriment to the stomachs of its individual members; the difficulty, however, is usually traced to any but the *right* cause. It is quite common for persons who suffer, for instance with periodic sick-headache, to affirm that what they eat has nothing whatever to do with it; that the headache is *inherited* from father or mother. Did they ever think to inquire what gave it to the father or mother? So much easier is it to put the causes

behind us, out of our reach, than to correct our own bad habits.

"But how can we do without sugar?" you ask. Why, easily enough, at least as a rule; even the acid fruits, as strawberries, cherries, etc., if fully ripened, are sweet enough for the unperverted palate. And if these fruits come to our markets a little green, we can at least be content to add only so much sugar as will make them *as sweet* as fully ripened fruit; this amount you will find to be very little. Some hygienists cook sweet and sour fruits together; preferring to make the one kind sweeten the other, rather than to use sugar. Whether this plan is at all times practicable, is a question elsewhere considered in this work. The fact that much of the sugar of commerce is largely adulterated, is another argument against its use; a great deal of what is sold in the market under that name, is glucose. Whether this substance is more or less injurious than cane sugar (it is certainly less sweet), might be a matter of some importance, dietetically considered. One thing is sure, both are proximate elements, and as such are incapable of sustaining animal life.

The habit which some have of sweetening cooked grains and breadstuffs, is a foolish and most unnatural practice; they are sweet enough of themselves; and if we were to train our children to eat these foods without sugar, they would not want it.* The fact is, we like the saccharine condiment in just those dishes in which we have been taught to eat it, and in *no others*. For example, we do not want sugar in mashed potato, cauliflower, or string beans, any more

* "Sir Anthony Carlisle relates an anecdote from his experience among the Arctic inhabitants: 'The most northern races of mankind,' he says, 'were found to be unacquainted with the taste of sweets, and their infants made wry faces, and sputtered out sugar with disgust; but the little urchins grinned with ecstasy at the sight of a bit of whale's blubber.'"—Pavy's "Food and Dietetics," page 412.

than we would relish salt or pepper in strawberries, stewed plums, or apple sauce. In other words, habit enables us to relish what we would otherwise barely tolerate.

SALT.

The fact that chloride of sodium, or common salt, is ordinarily found in the secretions and excretions of the human body, and also in the blood, has given rise to the belief that it is a necessary constituent in human food. And some physiologists have gone so far as to make the statement that it *must be eaten*, or the general health will suffer. Admitting, for the sake of the argument, that salt is one of the proximate principles legitimately obtained from the tissues of the human body, and that it is therefore indispensable in the vital economy, the question arises, why we should *eat* it, any more than that we should eat chloride of potassium, or carbonate of lime, or phosphate of magnesia. They, too, are found in the bones, and are obtainable from them; then why not eat these? The reply is, that there is no need; that the grains and other food products of the earth contain all the elements necessary to *make* these several constituents. This is very true; and it is equally true that the products named contain the *other* proximate principles—all of them—that are found in the human body in its normal condition.

In dealing with this, the physiological argument, we may as well recognize the fact that the chloride of sodium found in the perspiration or other excretions, and also in the saliva, milk, tears, and other secreted fluids, as well as in the blood, is largely if not wholly due to the presence of the salt taken with the food; and the fact that it is *found* in these fluids is no proof whatever that it belongs there. We can easily put into the stomach, whiskey, sulphur. iodine, strychnine, almost *any* thing, and afterward find these substances in the blood, and in most or all of the secretions or

excretions of the body. Persons who live without salt find that the perspiration, tears, saliva, and also the blood, lose their saline taste, even in a few weeks or months. And if we were to select for experiment those wild animals known to live without salt, as rabbits, squirrels, etc., it might be a question whether anything short of a destructive analysis of their tissues would reveal the presence of actual chloride of sodium.

But suppose we *should* find it ; what would this prove? Simply that the vital organism has the power to *create* out of the foods furnished from the natural products of the soil those substances which it needs in the vital economy ; and if it has this power in the wild animals, the presumption is that the same power is not wanting, either in domestic animals or human beings.

But it has been said that experience is, after all, the best test in these matters ; and that it is well known that not only human beings, but the domestic animals, require salt to keep them in healthful conditions. This latter statement is pure assumption—nothing more—the *facts* being on the other side. And the still more extravagant assertion, viz., that disease and death will follow the leaving off of salt is without a shadow of truth in it. There probably never was a time in the world's history when there were not people who lived and thrived without it, and also without meat. Certain it is, that there are such at the present day, both in savage and civilized life. But so much has habit to do with our opinions, that there is perhaps not one person in ten who does not believe that salt is absolutely essential to the health, and even comfort, of the domestic animals.* The

* Dr. Graham, in his "Science of Human Life," says : "It is a little remarkable that some have contended for the necessity of salt as an article in the diet of man, to counteract the putrescent tendency of animal food or flesh-meat, when there is not a carnivorous animal in nature that even uses a particle of it ; and few, if any, of the purely flesh-eating portions of

fact in the case is simply this : nearly all these animals—at least in the United States—have been trained to the use of it (as will presently be shown), just as human beings have been ; and the probability is that not one of them would touch the article if its taste had not been already perverted.

Any American who has visited the rural districts of Scotland for the first time, will at once remark that the horses, cattle and sheep, are among the finest that he has ever seen ; the cattle and sheep especially are far superior to the average of them in this country. No doubt something is due to the better and more humane treatment in feeding and housing them ; these fine cattle, sheep and horses, however, are never given *salt*. The only cattle in the Cheviot Hills that ever taste it (and no doubt the rule is general throughout the country), are those that are fattened for the market. And just here are two important facts to be noted.* One is, that these cattle at first *refuse* the salt, but by sprinkling it lightly over the food, they will, rather than starve, eat the latter with the sprinkle of salt on it ; and finally they come to like the thing itself. The other fact to make a note of is this : their owners give it to the cattle for the purpose of making them *eat more turnips*. In other words, by creating a feverish or inflamed condition of the stomach (which salt will do—and all the more if the animal is unused to it), the cattle gorge themselves with the juicy turnips to quench their thirst ; they also drink more water, as a matter of course. This increased feeding causes them to lay on adipose tissue rapidly ; or in other words, it prepares them more quickly for the market.

the human family ever use it in any measure or manner ; and most portions of the human family who subsist mostly on vegetable food, wholly abstain from it."

* These facts were obtained from a native of Scotland, who was familiar with the raising and breeding of cattle, and other farm stock.

The horses and sheep, as before stated, never taste salt ; in fact, the sheep are far too numerous and too frisky, as they run over their native hills, ever to be "salted" by the shepherds ; and they are perfect paragons in physical proportions, as well as in muscular activity. "But," say you, "they get it, from living so near the sea ; from the grass, and the *air*." Ridiculous ! The air of Scotland is as free from saline properties as it is in this country ; and so is the grass on the Cheviots. The salt in the sea is not "evaporated" into the air ; neither is it "deposited" in the soil that covers those great masses of uplifted rock, known as the "hills of bonny Scotland." It has been stated that the farmers in Kentucky who raise fine horses, made the discovery years ago, that by leaving off the use of salt their horses thrived better, and had finer, sleeker coats in consequence.

It now remains to account for the fact that, as a rule, the horses, cattle and sheep, in this country show no antipathy to it, but on the contrary, seem to relish it. The question is easily answered ; they nurse it in, with their mothers' milk, which is already impregnated with it, owing to the habit of "salting" among farmers. So that the calf, like the young child, gets the taste of salt with its nutriment from the hour of its birth.

"But what about the wild animals that go to the salt licks?" is the next question. This might be answered by asking another : "What of the wild animals that do *not* go to the licks ; if salt is necessary for some, why not for all ?" And we know that wild animals, as a rule, never taste it. We also know that it is positively injurious to some of them. It is a well-known fact that salt fed to birds, and even chickens, will kill them ; and a good supply of it about the roots of trees will destroy them. Of the deer that are said to go to the licks, Dr. Graham says : "As to the instinct of the lower animals, it is not true that there is any animal in

nature, whose natural history is known to man, which instinctively makes a dietetic use of salt. It is true that some herbivorous animals, such as the deer, when they are diseased by worms, grubs, or bots, in the alimentary cavity, will instinctively go in pursuit of salt, not as an article of diet, not as a seasoning to their food, but purely as a medicine, to destroy the animals in their stomachs ;* and they never instinctively use it at any other time, nor for any other purposes."

It is often asked whether any immediate pathological effects follow the use of salt. Let the person who asks this question, try taking *double* the usual quantity of this condiment, at dinner ; in less than an hour there will be a burning in the stomach (local inflammatory action) which will call loudly for water ; this feverish condition may last a good part of the afternoon, or it may pass off as the salty substance is carried out of the stomach. A better test is to take the salt itself, undiluted except with a little water ; try a tablespoonful if you like, on an empty stomach. (This amount of a food proper, as rice, oatmeal mush, or good apple sauce, taken by a hungry man, ought not to cause any unpleasant sensations.) If you are not a most inveterate salt-eater, the quantity named will produce nausea, and perhaps vomiting. But to save the trouble of so unpleasant an experiment, suppose we take the testimony of Dr. Graham. He says :

"Salt is a mineral substance, and is wholly innutritious and indigestible. If a tablespoonful of it be dissolved in half a pint of water, and introduced into the human stomach, it is immediately perceived by the organic sensibilities of that organ as an offending or disturbing substance ; great irritation is produced ; the vital forces, if not exceedingly impaired react with energy ; mucous

* Dr. Graham, who did not *believe* much in medicine, was evidently willing to give the worms the benefit of the "art killative."

and serous secretions are rapidly increased in the gastric cavity, to protect the mucous membrane from its acrid and irritating qualities; much distress is experienced by the individual, and nausea and vomiting generally succeed, as an instinctive means of expelling the offending cause from the vital domain; and in all cases, considerable portions of it are driven through the pyloric orifice in the intestines, where great irritation is also produced by it, and it is soon expelled from the bowels, with large quantities of serum secreted from the blood to dilute and flood away the irritating substance, and thus protect the living parts on which it acts, and the vital interests of the system generally, from its pernicious effects. When salt is taken into the stomach in small quantities with food, the result is somewhat different. If the stomach is perfectly healthy in all its properties and powers, however small the quantity of salt, it is immediately detected by the undepraved sensibilities of the organ, and a vital reaction takes place corresponding in energy and extensiveness with the quantity and strength of the offending substances, and by the mucous and serous secretions which are promptly produced, the parts are protected, and the salt is so diluted as to be rendered no longer very dangerous to the delicate vital properties of the tissues on which it may act. It is therefore not expelled from the alimentary cavity by vomiting nor purging, but is taken up in a state of solution by the absorbents of the stomach, and mingled with the blood of the portal veins; not in any case nor degree, however, to supply the wants of the vital economy, but to be expelled from the vital domain through the kidneys, lungs, skin and other depurating organs of the system, as a foreign substance. By the long and habitual use of this substance, however, the organic sensibilities of the stomach, and of all the other parts of the system, become so much impaired by its qualities, that they no longer make

so energetic a resistance to it as when they are healthy and undepraved, and the salt is gradually permitted to pass more and more freely into the general circulation, and be diffused throughout the whole vital domain, pervading the minute vessels of the glands and other parts, and becoming so permanently a quality of the serum of the blood as to be regarded by many as an evidence of the necessity for its dietetic use."

"The facts in regard to the dietetic use of salt, then, are these:—1. Salt is wholly innutritious—it affords no nourishment to any structure or substance of the human body. 2. It is utterly indigestible—it enters the body as a mineral substance—it is absorbed unchanged as a mineral substance—it goes the rounds of the general circulation as an unassimilated mineral substance—and is finally eliminated from the body through the kidneys, lungs, skin, etc., as an unassimilated mineral substance. 3. Its acrid quality is offensive to the vital sensibilities of the organs, always causing vital reaction or resistance, and *this vital reaction constitutes the only stimulation ever produced by salt*, and is therefore always attended with a commensurate degree of irritation and vital expenditure, and followed by a correspondent degree of indirect debility and atony; and consequently it always and inevitably tends to produce chronic debility, preternatural irritability, and disease; the stomach, intestines, absorbents, veins, heart, arteries, and all the other organs of the system, are always irritated, exhausted and debilitated by its presence. 4. It never in any measure promotes digestion nor any of the assimilating functions of the system; on the contrary, it always retards those functions, and is unfavorable to all the vital changes. Where a stomach has been greatly debauched and its energies prostrated, the sudden and entire abstraction of salt and all other stimulants from the food would undoubtedly leave that organ in a temporary state of atony or depres-

sion, which would unfit it for the performance of its function. But it is entirely certain that, in a stomach whose powers and sensibilities are unimpaired and healthy, salt always retards digestion and embarrasses the function and diminishes the functional powers of the organ ; and the impaired stomach receives tone from it only upon a principle which is always and inevitably unfriendly to its own physiological interests, and to those of the system in general. And this is all true of every other assimilating function and process of the vital economy ; and hence it is a well-ascertained truth in the science of physiology, that the dietetic use of salt is unfriendly to all the processes of assimilation, nutrition and secretion, in the vital economy.

5. It always, in proportion to the freedom with which it is used, diminishes gustatory enjoyment. It is true that there are some substances eaten by man, whose qualities are such that they are rendered more tolerable by the use of salt than they would be without it ; but it is nevertheless true that the use of salt with those substances always and necessarily impairs the nicely discriminating power of the organ of taste, and takes away the delicate perception of the agreeable qualities of more proper food, and thereby on the whole immeasurably diminishes the amount of gustatory enjoyment in the course of an ordinary life. Incredible as this may appear to many, every intelligent individual may demonstrate its truth by three months' fair experiment."

Now comes the query, how it came about that whole nations of people took to the use of salt, and continued it through successive ages. The reason is obvious : it was no doubt a necessity, after the introduction of animal foods ; for in order to keep these from putrefying, particularly in warm climates and on long journeys, an antiseptic was indispensable. A suitable substance for preserving meats from decay, was found in common salt ; and though it so

changed the nature of the meat as to render it harder to digest, and very much less nutritious,* still, it kept it from going to total destruction. Then, as the flesh-eaters partook of the salted meat they not only came to like it, but they also relished the vegetables that were cooked with it.

To be brief, one can learn to eat and *like* almost anything, by simply continuing the use of it; and the fact that it pleases the palate, is no proof either of its wholesomeness, or of its relative nutritive value. But if there is any one article of food or drink that we can not leave off, even for a day, without great discomfort (as wine, tea, coffee or a good salted beef-steak), we may rest assured that that article is doing us harm; or in other words, that it is not simply a food, but to a greater or less degree a *stimulant*; and just to the extent that we are enslaved by it, to that extent are we already injured.

A diet of salted meats, as almost every one knows, produces scurvy, the disease being caused by the combined effects of *salt* and *grease*. Richard T. Colburn, of New York, who is a hygienist, has written a small work on "The Salt-Eating Habit," from which the following quotations are taken: "I am told by an Italian who has lived among them, that the Algerines do not eat salt"; neither do the Indian tribes on the Columbia River, and Puget Sound—among whom the writer has traveled. "I am assured by many of the great herders in Texas, Colorado and California, that the native cattle are not fed salt, never see it, and

* Pavy says: "The effect of a saline is to depreciate the nutritive value of the article by extracting the soluble constituents, and by also hardening the texture, so as to render it difficult of digestion." He also says: "The analysis of brine shows that the process of salting must materially diminish the nutritive value of meat, for it is found to contain a large portion of the ingredients of its juice. Liebig estimates the loss of nutritive value as amounting to one-third, or even one-half. Soaking salted meat in water removes its saltiness, but can not, of course, restore the nutritive principles that have been lost."—*Food and Dietetics*.

will not eat it if offered." "I have both horses and cows that do not and will not eat salt if offered to them. The parents, when I cut off the supply, did not suffer perceptibly, and in a short time unlearned the habit. Neither the old ones nor their progeny will touch it now." "A hungry cow will eat what is called 'salted hay,' whereon the brine of the sea has crystallized ; but invariably the same cow will turn from it to good, well-cured meadow hay." "The whole of the birds avoid salt. It is fatal to chickens and tame birds, as every housewife knows." Chicken-cholera, this writer thinks, is caused in part by the salted food given the fowls from the table, wild birds not being subject to disorders of this kind. He further adds, "I believe it is well ascertained that when hogs get a moderate amount of brine, or pickled salt meat, it is impossible to save them." Mr. Colburn is firmly of the belief that the use of salt is a prolific cause of impaired digestion, owing to the unnatural flow of saliva and other digestive fluids which it stimulates. He also thinks that by causing indigestion, it to some extent injures the teeth.

All hygienists who have totally abstained from the use of salt, even for a few months, lose their relish for it, and after a time it becomes positively distasteful. And to illustrate the force of habit—even in leaving it off—it is a matter of common observation that unsalted foods which only come to the table occasionally, are less relished than those that are eaten daily. Another experience, which every one has to find out for himself, is this : salt when taken by any one not accustomed to its use, invariably creates thirst ; and where there has been chronic inflammation in any part of the alimentary canal, and it has disappeared, owing to strict hygienic living, salt food, used even for a short time, generally causes its reappearance.

PEPPER AND OTHER CONDIMENTS.

Pepper is not, like salt, a mineral substance : it is a vegetable poison. Flies will not touch it, neither will they eat salt. Black pepper, if taken on an empty stomach in the moderate quantity of a teaspoonful, will either be promptly ejected, or it will cause great disturbance in the stomach and bowels, and also in the heart's action after it enters the circulation. It is in no sense a food, but in every sense a stimulant, which is but another name for a substance non-usable by the vital organs, and therefore to be thrown out of the vital domain. Red or black pepper is a prolific cause, as are all stimulants, of enlargement of the blood-vessels, and ultimately of disease of the heart. Its immediate effect upon the tongue, throat, stomach and bowels is to create increased action, not only of the capillaries, causing temporary congestion and even inflammation of the mucous surfaces, but also of the organs which secrete the digestive fluids. Its *ultimate* effect is to weaken and deaden these organs, by repeated stimulation to abnormal action ; it also impairs or destroys the nerves of taste in the mouth, together with the gastric or other nerves which aid in the process of digestion. When these are weakened by stimulants, the functions themselves are necessarily impaired ; and confirmed dyspepsia, with its attendant train of bad symptoms, brings up the rear.

It is needless to say, that ginger, spices, nutmeg, cinnamon, and all that class of condiments, however much they may vary in quality, are stimulating to a greater or less degree, and must be put into the list of "things forbidden," in the hygienic dietary. The habit, every year increasing, of using spices and condiments in almost every article of food, and in such large quantities, can not be too severely condemned. The end must be hopeless indigestion, with prostration of the nerves which supply the digestive organs,

and detriment or ruin to the entire system. In the language of Sylvester Graham, "The stern truth is, that no purely stimulating substance of any kind can be habitually used by man, without injury to the whole nature." Nor does Dr. Graham stand alone in his views on this subject. Pereira says: "The relish for flavoring or seasoning ingredients manifested by almost every person, would lead us to suppose that these substances serve some useful purpose beyond that of merely gratifying the palate. At present, however, we have no evidence that they do. They stimulate, but do not seem to nourish. The volatile oil they contain is absorbed, and then thrown out of the system, still possessing its characteristic odor." Dr. Beaumont is essentially of the same opinion. He remarks: "Condiments, particularly those of a spicy kind, are non-essential to the process of digestion in a healthy state of the system. They afford no nutrition. Though they may assist the action of a debilitated stomach for a time, their continual use never fails to produce an indirect debility of that organ. They affect it as alcohol and other stimulants do—the *present* relief afforded, is at the expense of *future* suffering."

In doing away with spices and condiments, we must also dispense with pickles; there is nothing in a *pickle* to redeem it from hopeless condemnation. The spices in it are bad, the vinegar is a seething mass of rottenness, full of animal-culæ, and the poor little innocent cucumber, or other vegetable, if it had very little "character" in the beginning, must now fall into the ranks of the "totally depraved."

DRINKING AT MEALS.

Among the other "odd things" that hygienists believe in, is to abstain from drinking at meals. In the first place, we do not see any necessity for it; if the horse or ox can eat dry grain without stopping between mouthfuls to take a

sip of water, why should not we manage to swallow our foods, which are much more moist, without resorting to the "washing-down" process?

Like the habit of taking only *soft* foods, that of drinking at meals is exceedingly detrimental to good digestion. The evils it brings are manifold. In the first place, it inclines one to taking too large mouthfuls, and this, added to the fluid poured down with the food, interferes with thorough mastication. "Food well chewed is half digested." But suppose we "bolt" it in ten to fifteen minutes, as is the usual custom: instead of its being divided as finely as possible, and time given for the flow of the saliva whose office it is to dissolve the nutrient particles, and otherwise prepare them for the next stage in the process of digestion, the food enters the stomach, not only in a crude state mechanically, but without undergoing that *first step* in the vitalizing process which is ultimately to transform it into a constituent part of the blood.

If the ill effects stopped here, it would not be so bad; but they do not. The moment the gastric juices begin to flow from the follicles in the stomach, they are met, not by the smooth pulp of finely masticated and insalivated food, but by a crude, half-ground sort of "fodder," wet up with a slush of hot coffee, strong tea, greasy cocoa, ice-water, or some other liquid, each as foreign in its nature to that *vitalizing solvent* which the stomach itself prepares, as it is possible to conceive. And if the drink taken is very cold, it will check or prevent the flow of both the gastric and the salivary juices, and thus cripple digestion at every stage, from the lack of vitalized material to carry on that process. If hot drinks are indulged in, the opposite effect follows, viz., an over-stimulation, and therefore exhaustion of the glands and follicles that secrete the digestive fluids.

The next injury sustained is in the duodenum and small intestine; the food, or that part of it which reaches these,

is not in a condition to be properly acted on by the intestinal juices. The consequences are, first, that the digestive function in this part of the alimentary canal is overtaxed ; in other words, the chyme can not be made into chyle without an extra drain upon the digestive supplies in that quarter. Second, that the chyle formation is not as finely elaborated and vitalized as it would have been had the mouth and stomach digestion been complete. Third, that the chyle is too crude in quality to be fully absorbed by the lacteals, and carried into the blood.

Now, if the mastication of the food has been imperfect, the formation of chyme interfered with, and the chyle not of the best quality, what shall we say of the residual matters in the large intestine? If the *elaborated* material has fallen below the normal standard, the residue will most assuredly be in anything but the proper condition. If there were crude qualities in the chyme and chyle, there is crudeness intensified here ; the half-digested foods which could not undergo absorption in the small intestine are carried along the alimentary canal, and there is not a sufficient quantity of intestinal juices to moisten the mass properly. Instead of the normal condition of plastic matter, there is "chaff and water," so to speak, the latter being absorbed in the intestinal canal. Then comes irritation of the mucous surfaces, engendering heat (feverishness), and all those disagreeable symptoms which betray the presence of undigested matter. In other words, we have constipation, which is one of the forms of indigestion.

A result somewhat similar follows, when *too much* food has been eaten ; instead of being vitalized and appropriated, it rots or decomposes in the alimentary canal, and gases are given off.

But by far the greatest detriment of all is in the bad blood that follows imperfect digestion. If the chyle is not properly elaborated, every tissue in the body must

suffer for lack of the regular supplies of nutrition. The muscles shrivel up, the brain is not furnished with good pure blood, and the latter itself becomes thick and turbid, or poor and impoverished. In short, the whole being suffers from top to toe ; and owing to disuse, the very teeth become covered with scurvy, and decay or fall out.

Let us then masticate our food *properly*, and abandon the pernicious habit of washing it down ; it will take a little longer time, but we shall save it all back again from sick beds, headaches, and bad feelings generally. We shall also have better bodies, and clearer brains with which to work.

TEA, COFFEE, ETC.

Not believing in *any* drink at meals, it is hardly to be supposed that hygienists could recommend tea or coffee. If, as some think, a fluid "must be taken" with the food, the best is water or gruel, at about blood heat ; a drink warmer or colder than this, habitually indulged in, leads to evil consequences, as already shown.

Tea and coffee are injurious, not merely because they are taken at meal-time, but because they are stimulating, and in fact, poisonous. The water in which un parched coffee is steeped is of a greenish color, and will kill flies ; nor does the parching of the bean remove all its noxious qualities. To test this matter, try making coffee two or three times the usual strength ; then drink a pint of it on an empty stomach, eating nothing after it, and note the results. You will do well to try the experiment on some one accustomed to its use, or you might have to order the undertaker.

The question is often asked, "Which is the more injurious, tea or coffee?"—to which the answer may well be given, "Both!" The late R. T. Trall, M.D., makes the following statement: "Tea possesses strong nervine and moderate narcotic properties, and considerable astringency, due to the presence of tannin." And Prof. C. A. Lee, New

York, remarks, "A very strong decoction of *green* tea, or the extract, speedily destroys life in the inferior animals, even when given in very small doses." Of coffee, Dr. Trall, after speaking of its nervine and narcotic qualities, says: "From all the testimony I can gather from medical and dietetical writers, coupled with some degree of personal observation, I should judge it to be more directly injurious to the digestive process, and more exhausting to the general nervous energy than tea, and less injurious to the kidneys and pelvic viscera."

To the unperverted palate, coffee has a bitter, unpleasant taste. "Not so," says the reader; "I relished it from the time I was a babe." Quite likely; and in all probability you nursed it in with your mother's milk. Besides, very young babes will swallow from instinct almost anything that is given them, even to castor oil.

If any one really wishes to find out whether tea and coffee are doing him an injury, let him totally abstain from both for a few months; then let him take a good strong cup or two of either beverage, and retire for the night. If he does not lie awake part or all of *that* night, he will have better nerves than a good many others who have tried the experiment, and tossed on sleepless pillows till morning. What a blessing it is that "strong" toast-water, oat meal gruel, or fruit juice, even when taken by one wholly unused to it, has no such unpleasant effect!

One can often tell a tea-toper at sight, particularly if the stimulant has so far done its work as to affect the general health; the individual has frequently a shrunk, shriveled appearance that is unmistakable. And the tobacco-using habit, even in a young man, is sometimes detected by simply shaking hands with him. After the nerves are partially shattered there is no longer the firm grasp, but an unsteady motion, a half *tremor* in the hand, not unlike the shaking gait of a dog that has had a slight under-dose of

strychnine—enough, not to kill him, but to affect the muscles permanently, and produce something like “shaking palsy.” Poor creature! one always wants to end his misery as soon as possible—not the young man’s, but the dog’s.

“But how,” it is asked, “are we to replace the waste fluids of the system, if we do not drink at meals? When nearly three-fourths of the human body is water, how is this to be supplied?” The question is not hard to answer. In the first place, nature has provided an abundance of juicy fruits and vegetables, some of them having, as shown by analysis, as high as 80 to 90 per cent. water; and it is our own fault if we do not furnish our tables with these products. People are apt to forget that their bodies are nourished by the *organized fluids* in fruits and vegetables, as well as by the more *solid* materials. Some writers, as Schlickeysen, have placed fruit before bread, as an article of diet. The solid constituents of food, it is true, are found chiefly in the grains; but the fluids, which make so large a per cent. of the body, are more abundantly supplied from the juicy fruits.

As to drinking “for the love of it,” it is a fact worthy of note that if we live on fruits, grains and vegetables, *rejecting* animal foods and the various seasonings, as sugar, salt, pepper, spices, etc., we shall care very little for drinking, even between meals. It is the presence of stimulants in ordinary foods, that creates thirst; do away with these, and the thirst is gone. As if it were not possible in the very nature of things, to eat a meal without *something* to drink, the question is frequently asked, “How would chocolate do?”—quite forgetting that no one would care for *chocolate*, if it were not for the quantities of milk and sugar that are used in it as seasonings. Moreover, it is prepared from the oily seeds of the *Theobroma Cacao*, and is, therefore, a greasy substance, not at all fit to moisten the food preparatory to its being received into the stomach.

After what has already been said in regard to stimulants and stimulating drinks, it is hardly necessary to add, that the whole family of alcoholic beverages, even to the "lighter drinks," can find no favor with hygienists. They are all detrimental. Beer, for example, contains by volume, 5 to 8 per cent. of alcohol, sometimes a little more than this, and sometimes a little less. "Adopting mean numbers, a pint (20 ounces) of beer will contain about an ounce of alcohol (Parkes.)" * Wine usually has 18 to 22 per cent. ; sometimes as high as 30 per cent. The habitual use of beer inclines to a plethoric habit, and the formation of loose, flabby tissue, with very little muscle. Moreover, the supposed good effect of all stimulating drinks, comes from the rallying of the system to get rid of the alcohol, which is a poison, an anti-vital or life-destroying substance. After the excitement or stimulation is over, there is a corresponding depression of the system, showing that vital force has been expended in the effort made to expel the offending thing. The stronger the beverage taken, or in other words, the larger per cent. of alcohol in it, the more marked will be the effects.

It is sometimes asked, whether new cider is injurious as a beverage ; to which it must be replied, that the adjective "new" is rather indefinite. Right from the press, the juice is almost as bland and unstimulating out of the apple, as in it ; but in a few hours there is a "smack" to it, and a foam, that tell of something *stronger*. Many a poor fellow has again been led into the downward path, simply by a drink of cider. The safe way, is to take the juice and the flesh of the fruit together. Any drink that contains even a small per cent. of alcohol, injures the blood ; it affects the red corpuscles, causing them to part with a portion of their water. When a large quantity of alcohol is present, these

* Pavy's "Food and Dietetics," page 364.

corpuscles shrivel up into corrugated discs, and often adhere together, creating obstruction in the blood-vessels, and to a certain extent cutting off the nutritive supplies from those parts through which these vessels ramify. It also affects the fibrin of the blood, causing it to coagulate or form into clots, and in some instances producing paralysis, or even death.

FOOD, INTELLECT AND MORALS.

That the character of the food we eat bears a very close relation to the quality of tissues made from it, is a fact which has been frequently stated in these chapters; it seems indeed to be fairly well understood, that in order to develop strong, firmly-knit muscles, the food eaten must not only be simple, but sparing. But that the dietetic habits of a people have anything to do with their intellectual and moral powers, is a very *important* fact which we seem continually to lose sight of. It can not be denied, however, that the history of the human race, from the earliest to the latest times, furnishes the best of evidence on this point; and the relation holds, not merely with respect to individuals, but to nations. Following out the history of the latter, we find them in the zenith of their power at a time when for successive generations the habits of the people, dietetic and otherwise, had been simple and healthful. On the other hand, the decline and downfall of these nations came not until after they had *departed* from their plain and frugal ways.

And were we to trace the career of individuals eminent for learning or power, we should find a like correspondence to exist; men as well as nations reach the acme of their strength, intellectually and morally, before their minds are clouded, and their bodies plethoric by full feeding and other voluptuous habits. Those who are born in the lap of luxury rarely attain to any considerable prominence, either

as thinkers or workers. It is also well known that the greatest philosophers, and the most profound scholars, both in ancient and modern times, have been men of temperate and abstemious habits.

In the light of history, therefore, there is but one conclusion to be drawn in the matter ; viz., that in order to make the best use of our minds, or to develop them to their greatest capacity, the food we eat must be proper in quality and moderate in quantity. Indeed, how could it be otherwise, when we consider that the brain, which is the organ of the mind, is constantly supplied with blood for its special growth and nourishment, and that this blood is *made out of* the things eaten ? If, therefore, the quality of the food is bad, or if any substance deleterious to the vital organism is taken with it, the brain will immediately suffer ; and when this organ is not in its normal condition, how can we expect it to do good work ? In other words, bad food, or too much of it, makes bad blood ; bad blood causes a disordered brain ; and a disordered brain can not do first-class thinking.

The ill effects of stimulants in food, are manifold ; they send an increased quantity of blood to the base of the brain, causing congestion of the cerebellum. This congestion creates excitement or preternatural action of the animal propensities, inducing in the individual a desire to fight, commit murder, and do all sorts of immoral or unlawful things. But the evil does not stop here ; the habitual taking of stimulating substances, even in limited quantity, causes an increased *growth* of those organs that are located in the base of the brain ; and this, with the greater activity that necessarily follows, leads to intense passionai emotions, and excesses of every description. So that murder, theft, and all manner of evil doings, are the legitimate results of the introduction into a community of *stimulating foods and drinks*.

“But,” says one, “why speak of these things in a cook-book? The temperance hall is the place to discourse upon the evils of alcohol.” To this query there are two answers; in the first place, it is a lamentable fact, that King Alcohol does not confine himself to the highways in society. He appears in private circles, takes a seat at the domestic hearth, and makes himself welcome at table. His fingers have “touched” the delicate puddings, the rich pastries, or other fine desserts; he comes with the wines, the pale sherries, and brandies, that are used in preparing these dishes. He is in the houses of the rich, and the hovels of the poor; he goes to the gay feasts, and he comes home to the midnight embers, burning low on the hearth-stone. He makes his way to the churches, and appears at the sacramental board; and the reformed inebriate is reminded, at one and the same time, both of the love of Christ, and of former debauches!

But this is not the whole of the matter; when King Alcohol comes to our firesides, and sits down at our tables, he is met by a multitude of his own “blood relations”; some near of kin, some more distant. And the peculiarity of this numerous household is, that if you entertain a single *one* of them, that individual never stops till he *brings all the others with him*.

Figures aside, however, the plain facts are these: if one is in the habit of using tobacco, tea and coffee can not be dispensed with; and if either of these beverages forms part of the morning repast, a “good rich beef-steak” is the next thing in order. Moreover, if steak and other meats come to the table, salt and pepper are expected to come also; and the other contents of the castor usually gain an easy admittance. Then are introduced the spicy pickles, pungent sauces, and other condiments that set the blood on fire, and inflame the passions.

Verily, the wives and mothers of this country, are them-

selves responsible for much of the ruin wrought in their own households. Had their tables been plain and simple, these things had not been. Is it any wonder that crime and bloodshed stalk rampant through the land? That licentiousness lurks in the by-paths? That women take to morphine or the mad-house, and men blow their brains out? That homicides multiply with amazing rapidity, and theft and other crimes are frequent in high places? These outrages on common decency and the whole community, are not committed by the plain, temperate members of society, who sit down three times a day to unstimulating food, go to their work regularly in the daytime, and retire to rest at night-fall. Could the private histories of the lawless ones be written, we should find the "little foxes" that spoil the tender vines.

Rev. J. F. Clymer, whose admirable little work on "Food and Morals" has already been alluded to in this book, gives a forcible illustration of the effect which diet has on character, even in childhood. "A father, by prayer and precept, and flogging, had done his best to reform his boy, whose staple diet was meat and sausage and pie and cake at his meals, with lunch between. The family physician said to the father, 'If you will put a leech back of each of your boy's ears once a week for a month, you will do more to reform him than your preaching and pounding will do in a year.' The father asked for the philosophy of this prescription. 'Why,' said the doctor, 'your boy has bad blood, and too much of it; he *must* behave badly, or he would burst.' 'Then,' said his father, 'I'll change his diet from beef and pie to hominy and milk.' In three months thereafter, a better boy of his age could not be found in the neighborhood. The acrid, biting, evil blood had not become food for leeches, but it had done its wicked work and passed away; and a cooler, blander, purer, safer blood had been supplied from sweeter, gentler food sources."

The trouble in this country is, that the fathers and mothers do not begin right ; they demoralize their children from the very start, by giving them at table and elsewhere their own way in everything. In fact, the child orders and the mother serves. The women in the old country set us a good example in this respect ; in England and Scotland no mother would think of seating her little child at the table with grown people, and giving it any and everything that was before it. She places it at the child's table in the nursery, and gives it plain bread and milk or mush and milk. Not so in America ; here the mother asks her little one what it will *have*, instead of giving it what she thinks it needs. Truly, we are a fast people ; and unless we change our habits we shall run a fearful career, brilliant but brief, dashing but dissolute, and ending at last in imbecility or infamy.

The physicians of the hygienic school, claim to have demonstrated two FACTS : first, that intemperance (unless inherited) rarely if ever *begins* until there has been the habitual use of condiments and the lighter stimulants, either in the food or drink. Second, that when the habit of taking strong drink is established, the safest, surest way to reform, is at once to abandon *all stimulus in the dietary*, at the same time that the drinking is discontinued. Many inebriates have been reclaimed in this way, and in a comparatively short space of time ; nor is there in these cases the slightest desire to resume the drinking habit, so long as the other stimulants are not indulged in. In other words, by living *correctly*, you conquer the evil habit.

But an ounce of prevention is worth a pound of cure. Can not the mothers act on this hint, and *see to it* that their sons (and daughters) are reared in such a way that vice will be no temptation to them ? Solomon—who must have known from experience—said : “ Train up a child in the way he should go, and when he is old he will not depart from it.”

Women in this country do *too much cooking* ; they prepare too many kinds of food for a single meal ; they literally *load down* their tables with an endless variety of dishes, showing a lack of good taste, as well as good judgment. A few dishes, well prepared, would be altogether better. And the practice of high seasoning, not only in dessert dishes, but in the plainer or more substantial ones, as vegetables, meats, meat preparations, etc., is most deplorable. These highly seasoned foods poison the blood, congest the liver, and inflame the mucous surfaces ; and if long continued they prostrate the nervous system and ruin the general health. "That machine will wear out the soonest which works the fastest." Strong constitutions, it is true, may not give way for years ; but sooner or later they too must succumb.

FOOD COMBINATIONS, ETC.

Most hygienists recognize the fact that too great a variety of foods eaten at a single meal, is not favorable to the best digestion ; partly because it tempts the appetite to over-indulgence, and partly from too great a stimulation of the nerves of digestion, by the oft-repeated presentation of a new substance for them to act upon. But very few pay much attention to the *proper combination* of foods, provided they be considered hygienic. Neglect of this important feature in dietetic reform has turned many away from it in disgust ; and it has kept not a few of those outside from becoming hygienists.

It is folly to overlook the fact that there is a certain *fitness* or adaptation to be observed, both in the selection and classification of foods, which enhances their value as a whole ; it will not do to huddle them together indiscriminately, either on one's plate or in the stomach. Baked beans and grape juice are both very satisfactory, in themselves ; but they have so little in common that no one would think

of eating them together ; though the harm resulting from so injudicious a combination, would be more apparent in some cases than in others.

Not every one has a cast-iron stomach ; and experience teaches that an individual whose digestive organs have become enfeebled from taking drugs (poisons), or from the long use of stimulating foods and drinks, has need to be particularly careful in the matter of diet. Suppose he is trying his first "hygienic dinner" ; if he chances to partake of two or more substances so unlike in their nature and organization, that they do not "go well" together, in less than an hour's time the stomach and bowels will be filled with gases and undigested food ; while the "pangs of hunger," so called, will not have diminished in the least. In other words, digestion has not gone on properly ; and a certain morbid *craving*, which is next to ungovernable, has set up its clamor for something that can "satisfy." And though these feelings are the legitimate results of long-continued dissipation in eating—or of some other violation of law—that fact does not make it any easier to bear the discomfort. More than once has a patient taken his first meal at a "Cure," and risen from the table with the firm conviction that that diet will not do for *him* ; when a little care (or knowledge) on the part of the managers, in the matter of combining foods, and a little previous explanation as to the unsatisfied feeling that necessarily follows the leaving off of all stimulating substances, would have induced the new-comer to make a more thorough test of the better way.

The early Grahamites made many serious blunders in their first efforts at dietetic reform ; they ate, for instance, their "bran-bread," which was a wretched food, manufactured out of dirty wheat coarsely ground, or from a mixture of poor white flour and common coarse bran, making an article better suited for horse-feed than for human stom-

achs. Of course, there was no sweetness in it ; the pearling or cleaning process, which the Akron people understand so well, was not then applied to the manufacture of Graham flour ; and the bran was so coarse and irritating that the "Graham bread," as it was called, *made* more dyspeptics than it cured. The consequence was that those who ate it were a by-word and a reproach ; and all succeeding dietetic reformers have been forcibly reminded of their folly, by the keen thrusts of a scrutinizing public—which always looks after these matters.

Nearly half a century of close contact with invalids, has placed before the hygienic physician certain *facts* which can not be ignored ; and whether the science behind them is fully understood or not, the facts themselves remain. For example, if we have a nervous dyspeptic to treat, we know better than to set before him, at one and the same meal, strawberries and beets ; or strawberries and cabbage ; or apples (raw or cooked) and sweet potatoes ; or apples and beans. These are only *examples* of at least fifty combinations that could be made, any one of which would give a weak stomach indigestion. The question then comes, whether it is not possible to lay down some general rules, which shall apply, in a certain sense, to all cases ; whether, indeed, the vanguard of the "hygienic brigade" has not at last reached that point in the reform.

It certainly stands to reason that the food products of the earth should be studied *in their relations to each other*, as well as with respect to their nutritive qualities. In the first place, the commissariat, as a whole, should have in it all that is needed for the fullest growth and development of the body ; and there should, if possible, be a sufficient variety to allow of more or less change in the bill of fare from one meal to another, and from day to day. One tires of the same thing, or exactly the same *routine*, over and over ; and all the more if there is any defect in the food

itself, either as regards its quality in growth and maturity, or its actual nutritive value.

Moreover, the wants of the system are not always exactly the same ; they may vary somewhat, owing to diseased conditions or torpor of functional action, so that there will be an actual *need*, if not a positive longing, for certain kinds of food that are necessary to restore normal action to the system. For instance, a person who has taken "quantities" of certain medicines, the effect of which is to congest or torpify the liver and other organs of depuration, is apt to have an intense craving for acids. Another, who has been fed for weeks on a diet that contains too little nutrient material, will call for something that has a larger per cent. of solid matter in it : as bread, beans or peas, rather than cabbage, turnips, soups, or other watery substances.

Many a person has risen from the table feeling dissatisfied, actually hungry, after eating in quantity a full meal. In such cases, either the articles eaten have not been digested, or they were of such a character that they did not supply the natural waste of the system. One who has made this matter a careful study, can very nearly tell at a glance whether the food on the table is such as will give general satisfaction to persons with reasonably normal appetites,—though, as just now stated, there are individuals whose appetites are anything but normal. For example, the tea-toper or coffee-drinker suffers from headache after trying to make a breakfast without the accustomed beverage. Or the lover of beef-steak rises from his morning meal from which the favorite dish is absent, feeling that he has had no breakfast. The sense of *all-goneness* in these cases is not from a lack of nutrient material, but owing to the absence of the habitual stimulus.

In selecting foods for the table, one must take into consideration both the habits of the individuals who are to be fed, and the ever-varying climatic conditions. Persons of

sedentary habits would be satisfied at a given meal with a few plain articles, and these largely of fruits ; whereas, a laborer would require a larger proportion of more nutritious foods, as Graham bread, beans, or some of the grain preparations, with less juicy or watery materials. If, however, the weather is warm, inducing profuse perspiration, the more juicy fruits and vegetables are in special demand. But a combination of dishes that would be delightful in the sultry days of July or August, would be altogether insufficient to satisfy the appetite on a cold December day, or a keen frosty morning. And when the weather is not only cold, but *damp*, the food is always best relished if it is warm. Often a good plate of warm soup (not hot), to be followed by corn-bread and baked potatoes, and perhaps another warm vegetable, is very acceptable on damp, cold days, when there is a raw atmosphere, chilling one all through.

To be brief, the cook should use her rare good sense in these matters ; she should consider the character of the eaters, whether they are sick or well ; accustomed to active outdoor exercise, as farmers, or to sedentary habits, as students, book-keepers, etc. She should also vary the quality of the food, not only to suit the weather, but the season of the year. In May or June, when the markets are full of strawberries and other fruits, with plenty of fresh garden stuff, the "boarders" will hardly be content six days in the week with dried apples and prunes for fruit, and old potatoes with last year's beans, for vegetables ; they will be thinking of the green peas, asparagus and new potatoes, that they saw in the city market ; and the loads of fresh berries, cherries, etc., that looked so inviting.

Last, but not least, she must study the *individuality* of the various food products ; for, as already remarked, certain kinds are so unlike—not to say antagonistic in character, that they seem not to digest well together ; or as we

sometimes say, they quarrel with each other. For while it may be true that thoroughly sound stomachs can digest almost anything, and feel no unpleasant sensations from all sorts of heterogeneous combinations, it is *not* true that invalids, or persons of feeble digestion, can do likewise.

After more than twenty years' experience and careful observation, the writer is fully convinced that in order to get the *best possible results from nutrient materials*, we must not ignore those kindred ties among food products which make an agreeable combination; nor must we be oblivious to those *opposite* qualities in them, which by fine contrast please equally well. Take, for example, sweet potatoes and tomatoes; these make a good combination, and very acceptable to most persons, the one being sweet, the other acid; the one highly nutritious, and the other decidedly juicy.

To those who have not made this subject a study, the following hints may be of practical use; though in many things it is next to impossible to lay down definite rules:

1. Fruits and vegetables should not, as a rule, be eaten together; that is, at the same meal; if they are so eaten, persons with feeble digestive organs will usually suffer.

2. If vegetables are eaten, the noonday meal is the best time to take them, two or three varieties being quite sufficient. Tomatoes do well with vegetables, grains or meats; but they should not, as a rule, be eaten with fruits.

3. The Irish potato seems to be an exception among vegetables; it is so unaggressive in its nature that it seldom quarrels with anything. It may therefore be eaten (by most persons) with *either* fruits or vegetables; and it always does well with grains.

4. Fruits and cereals are particularly suited to the morning and evening meals; and very little other food is required.

5. A good rule, when suppers are eaten, is to make the

meal of bread and fruit only, these being taken in limited quantities, and at an early hour.

6. Fruits, if eaten raw, should be ripe, and of good quality; and persons with feeble stomachs digest them more easily at the beginning of the meal; this is particularly true when warm foods make a part of the repast.

7. Fruits raw or cooked, may be eaten at dinner, provided no vegetable (unless it be the potato) is taken. But if raw, they should be eaten *first*, particularly if there are warm foods to follow.

8. Some persons can not digest certain kinds of raw fruits for supper, or late in the day; let them take these on sitting down to the breakfast table; or the first thing at dinner, unless there are *vegetables* at this meal.

9. If meats are eaten—a debatable question between strict hygienists and “other people”—take them at the noonday meal, with or without vegetables; and in cold weather, rather than warm.

10. The grains digest well with all other foods; though some persons can not eat them in the form of mushes. They should always be thoroughly cooked.

11. Persons with feeble digestion, should as a rule, confine themselves to a *single kind* of fruit at a meal; they can make the changes from one meal to another.

12. Those who find it difficult to digest vegetables, should not attempt more than one kind at a given meal, until the digestion is improved. And often it is best to leave them off entirely for a time.

13. In selecting vegetables for a single meal, do not, if there are several varieties, have *all* of them of the watery or juicy kinds, as cabbage, asparagus, white turnips, etc.; nor all of the drier sorts, as baked beans, winter squashes, sweet potatoes, etc.; but blend the more and *less* nutritious kinds in a judicious manner. Or if you have only the watery ones at hand, be content with not more than two varieties,

prepare a side-dish of something rather nutritious, and then add a dish of warm corn bread, as an accompaniment, particularly if it be a cold day.

14. If you have for dinner a thin vegetable soup, follow with something more substantial, as baked beans, baked potatoes (sweet or Irish), or corn bread ; but if you have bean or split-pea soup, let the other vegetables be of a kind less hearty.

15. On a very cold day, have a warm dinner of good nutritious articles ; select mainly solid foods with grains, rather than thin soups and watery vegetables.

16. On a warm day make the breakfast largely of fruits, with a moderate supply of cereals. The dinner may be of young vegetables (or fruits), a dish of grains if you like, and a little bread. Eat *lightly*, and you will suffer less from heat—particularly if no seasonings are taken. For supper, a glass of cold grape juice and a slice of loaf bread, is fine in hot weather.

17. In very cold weather, take the chill off your stewed fruit, fruit pies or other dishes, before serving them. Pastries if used, are best at the midday meal—and so are puddings.

18. If there are invalids at the table, they should eat nothing that is *very cold* ; food not much below blood heat is best, particularly in cold weather ; and the dining-room should be comfortably warm.

19. Never have too great a variety at a single meal ; have few dishes, well prepared, and make the changes from one meal to another ; this will please better on the whole, and it will not too rapidly exhaust your limited supplies.

20. If one meal happens to fall a little below the average in either quality or variety, see that the next is fully up to the mark.

TWO MEALS OR THREE.

The question is frequently asked, whether it is better to take two meals or three during the day. This would depend very much upon the habits of the individual, and somewhat upon the healthful conditions of the stomach. Some persons can digest three meals perfectly, while others find it hard to manage two comfortably. If the third meal, light in quantity and simple in quality, and taken at an early hour, causes distress, then it would be well to try leaving it off. Sometimes a longer *rest* will enable the stomach to do better work.

Persons of sedentary habits combined with indoor life, usually find two meals sufficient, provided these can be arranged at proper hours. When two meals are taken, the breakfast should be served about eight o'clock, and the dinner at two ; this gives six hours between, and the afternoon not so long as to cause hunger. It will be found, however, that a great deal depends upon previous dietetic habits. Most persons who have been long accustomed to either two or three meals, prefer not to make a change : the *old* way is more satisfactory.

In ordinary cases, it probably makes very little difference whether two meals or three are taken, provided no discomfort is experienced ; usually where the digestion is fair, and the habits of the individual active, three are preferred. The third or last meal should be much lighter in quantity than the others, very simple in quality, and taken not later than six o'clock. This leaves three hours till bedtime, putting the latter at about nine o'clock, or half-past nine ; long enough for all the food to pass out of the stomach, and leave that organ in a restful state, ready for the night's repose. If the digestive organs are not strong enough to accomplish this much easily, then it is plain that the third meal should be left off.

DIETETIC RULES.

Eat slowly, masticating your food thoroughly before swallowing it. The first process of digestion—called insalivation—takes place in the mouth.

Never eat when you are mentally excited, or physically exhausted ; if you are very tired, lie down and rest half an hour before going to the table. Neglect of this rule has caused many a fit of indigestion.

Do not take vigorous exercise, either physical or mental, immediately after eating. Light exercise, as clearing up the table, washing dishes, or walking about the house or garden, facilitates digestion ; but heroic exertion, as running, pulling, lifting, washing or wringing clothes, etc., retards it.

A bath should never be taken directly after eating, and particularly after a very *hearty* meal. A good rule is not to bathe for half an hour before, and for two hours after eating.

Take your food regularly, at stated intervals—not at any hour of the day ; and do not form the habit of eating between meals.

If anything is taken outside of the regular meal-time, ripe juicy fruits, as apples or oranges, will usually occasion less disturbance than more hearty or substantial food.

Let at least the greater part of each meal consist of *plain* food ; and do not continue to eat after the actual wants of the system are satisfied.

The supper should be the lightest meal, both in quantity and quality ; and it ought to be taken at least three hours before retiring for the night.

Do not wash down the food with a fluid ; eat without drinking ; this will insure more thorough mastication and insalivation ; it will also help to preserve the teeth. The horse never leaves his oats or corn to take a sip of water

between mouthfuls ; nor is he ever tortured with the tooth-ache.

It is a bad plan to rise from the table, rush out into a freezing atmosphere, and take a long cold ride ; the body becomes chilled and digestion is apt to be interfered with.

A few minutes' brisk walking in the morning, filling the lungs with fresh air at every breath, is an excellent tonic before breakfast. Try it—you that are not too feeble to leave the room.

As a rule, fruits and vegetables are best served at separate meals ; vegetables, if eaten, should be taken at dinner—near the middle of the day.

Raw ripe fruits, as apples, berries or cherries, are fine for breakfast, and best at the beginning of the meal.

Avoid the frequent use of soft, sloppy foods ; and, also of soft bread ; give the teeth something *to do*, if you would have them grow strong, and keep clean.

Do not take very hot or very cold foods or drinks ; these crack the enamel of the teeth, and destroy them ; they also weaken the salivary glands, enfeeble the stomach, and impair digestion.

If you want good teeth, you must first eat the kinds of food that will make them, and then you must *use* them, or they will decay. Remember that a cow can be slop-fed till her teeth will fall out. To preserve the teeth, then, you must throw white bread to the dogs (and it will kill them if they are fed exclusively on it), eat bread made of the flour of the *whole grains*, and have it well baked ; it must be hard and crusty enough to keep your teeth clean and bright.

To secure a good sweet breath, the digestion must be perfect and the *teeth clean*. Use the brush *after* eating, not before. Some persons brush their teeth the first thing in the morning and the last thing at night ; this leaves them unbrushed between breakfast and dinner, and between dinner and supper—or in other words, only clean at night. Form

the habit of brushing the teeth the *first thing after you rise from the table.*

Another important rule, and always applicable, is the following : make the meal as enjoyable as possible ; a cheerful face, with pleasant conversation, is an excellent condiment. And if children dine with "big folks," let them learn at the start, that they too are to be put upon their good behavior.

HINTS ON COOKING.

The following hints on cooking, some of which apply to Part II., and some to Part III., may be convenient for reference.

In making loaf bread, the flour should in cold weather be slightly warmed before mixing, and the dough set to rise in a wooden tray or thick earthen crock—never in a tin vessel, as the dough is apt to chill from draughts of cold air. Bread to be good and wholesome must be thoroughly baked, having the crust nicely browned, but not scorched ; and it is better baked in pans that have *closely fitting covers* ; these confine the escaping vapors about it, and by preventing evaporation make the bread much sweeter.

Mix all pastries lightly and quickly, gathering the mass together without kneading ; have the materials as *cold* as possible, and either bake as soon as mixed, or lay the paste into a refrigerator. Never make pies or cakes till the oven is ready for them ; roll your pie-crust pretty thin, start with a brisk oven, hot enough to brown without blistering or scorching, and moderate the heat as the baking proceeds. Be sure the *bottom* crust is well done before taking the pies from the oven. This for *cream* pastry. • Pies made of apples that are under-ripe and their crust shortened with butter (which, however fresh and sweet, is always less wholesome than cream), are improved by baking an *hour and a half* in a *very* slow oven.

Nearly all vegetables are best dropped into boiling water, and cooked rapidly ; particularly those of a watery nature, as cabbage, turnips, string beans, young peas, and potatoes, new or old. As soon as done, lift from the fire ; cooking a little too long, makes all the difference in the flavor. Cabbage thinly sliced will cook in thirty minutes. Another direction applicable to nearly all vegetables, is to put them on in as little water as possible, having none to pour off, or next to none. As a rule never *soak* potatoes or other vegetables before cooking them, and never parboil them—not even beans, unless they are very old and strong, and then only for a few minutes ; when the water is drained off replace it with more, *boiling hot*.

Fruits if overripe must be cooked but little, and taken from the fire the moment they are done ; a trifle *underdone* is fully better than cooked too much. All green or unripe fruits are improved by starting them in cold water, and cooking or simmering *slowly* (without stirring), for a long time. The long, slow cooking makes the fruit taste sweeter and riper.

All *dried* fruits, as apples, peaches, pears, prunes, sweet currants, etc., should be well washed, dropped into boiling water, cooked rather quickly, and removed from the fire as soon as done. Peaches and apples dried by steam, usually cook in twenty-five or thirty minutes, and sweet currants in thirty-five minutes.

Grains are best *steamed*, starting them in hot or cold water (rice is less sticky started in cold), and cooked till tender ; the water in the pot below should be kept *constantly* boiling.

Steamed bread, to be good, must be well managed ; as soon as the batter is mixed, pour it into a round pan, well oiled, and set this inside the steamer ; the pan must not be quite full. Then cover it with an inverted plate or pie-pan ; and if the steamer is one with holes in the bottom, place two or three bits of wood under the pan, so that the steam

can enter beneath it. Now put on the lid of the steamer, the latter being closely fitted over a pot of boiling water and cook constantly, keeping the water at a fast boil. Do not uncover till the bread is done ; then lift the lid, take out the pan, and set it in a hot oven to brown ten or fifteen minutes. Steamed puddings, mixed in a batter, are managed in the same way, except the browning at the end.

When corn meal is used in mixing either steamed breads or puddings, take golden or white *flint* meal, if you can get it ; and fill the measure not quite so full as when meal from the *dent* corn is taken.

In making puddings or steamed breads, *never heat* the pan before oiling, as this will make the batter stick to it ; a little olive oil, or beef dripping, may be used instead of butter. In baking batter puddings, or any that may adhere to the sides of the dish, a good plan is to place the latter in the oven within a shallow vessel (as a dripping-pan), containing a little boiling water. Custards, if baked, are best managed in the same way.

Always heat milk in a farina-kettle if you have one, so as not to scorch it. In the absence of this utensil, heat in a tin bucket set inside a pot of boiling water ; or a thick stone or earthen crock will answer, if the fire is not too hot.

If bread-crumbs are used in puddings, dressings, hashes, etc., have at least a portion of them of good, home-made Graham loaf, unsweetened ; the gluten in this bread makes it richer and finer flavored than the white.

In preparing sweet currants for cakes or puddings, pick them over carefully, and wash in a colander till they are *perfectly clean* ; then dry in the oven, being careful not to overheat them, and finally dredge well with flour before stirring them in.

If soda is put into bread, cake or puddings, use it sparingly. A "teaspoonful" of soda, is simply the spoon filled until it is *level* ; and the same for cream of tartar. But if

baking-powder is employed, the spoon must be *heaped* somewhat, owing to the fact that nearly all baking-powders are one-third starch. The proper proportion of pure soda and cream of tartar, is said to be about six ounces of the former to sixteen of the latter.

When eggs are used, as in making custards or puddings, beat the yolks and whites separately ; if you sweeten first, whip the yolks a little (to avoid lumping), then beat with the sugar, and stir the whites in last. Eggs to beat well, should be fresh, and moderately cold ; and experienced cooks say they should never be beaten in a *tin* vessel, but in stone or earthen ware.

The rule for custards, is to cook *very* slowly ; and if baked, to take from the oven as soon as they are well thickened—before they begin to separate, or become watery.

Soups must boil or simmer *slowly* till done ; and most kinds need three or four hours' cooking. When necessary, remove fragments of meat, bones or vegetables, by straining through a colander at the last ; return to the pot and heat again, before serving.

Meat, if roasted, should be placed in a hot oven till the surface is seared, and then *bake slowly* till done. If stewed, pour boiling water over it till half covered, skim if necessary, boil rapidly five or ten minutes, and then *stew gently*, till a fork will go through the thickest portion of it easily. The water should all be evaporated when done ; and if finished as a pot roast, heat the oil or gravy in the bottom till the under surface of the meat is nicely browned ; then turn it over, and brown the other.

If cold meat is to be warmed over (as in a hash), do not heat too long ; you can cook a good hash in fifteen or twenty minutes, after the meat, bread and potatoes are prepared.

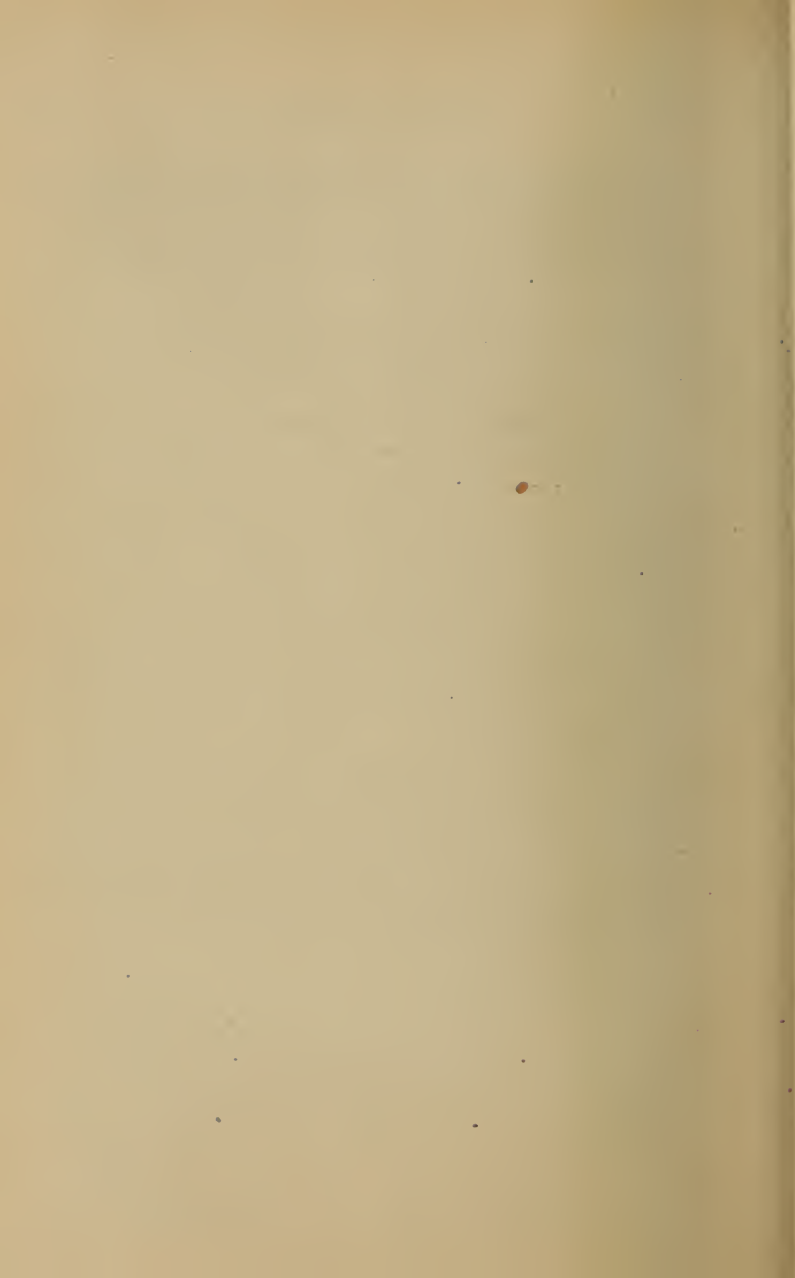
Cold potatoes are best warmed over as follows : oil the skillet slightly, just enough to keep them from sticking ;

slice, if they are whole ; if mashed, see that a *second* crushing leaves no lumps, and stir them up lightly with a fork. When the skillet is hot turn in the potatoes, and heat quickly till they are nicely browned on the bottom, but not scorched. Then with a knife turn them over, brown again, and dish for the table. Ten minutes will suffice for the browning ; and in ten minutes more, they should be eaten.

To toast bread perfectly, cut it in even slices about half an inch thick, and brown, not too rapidly, over a bed of live coals ; the bread should be stale to begin with. Turn it over before the slice warps too badly ; that is, if you are holding it on the end of a fork ; then toast the other side, and turn again if necessary. When done, the entire surface should be crisp, and an even chestnut brown. If the crust scorches a little, scrape off its burnt edges with a knife.

To warm over mushes or grains, never add a particle of water, not even boiling ; turn into a stew-pan, set where it will heat quickly, cover, and stir two or three times till the mush is thoroughly hot.

To warm bits of stale bread, dip the slices quickly into cold water, and lay them in a hot oven ten minutes, or till the surface is crisp, and the bread well heated through ; it will be as good as new—*better*, to most persons' liking. Cold biscuits, split in two, dipped quickly into cold water, and then heated in the same way, are excellent.



JUST PUBLISHED.

Health in the Household; or, Hygienic Cookery.

This large work by Mrs. Dr. Dodd^s, a student of the late R. T. Trall, M.D., is undoubtedly the most comprehensive work ever published on the healthful preparation of food. A large volume of 600 pages, bound in cloth, or oil-cloth, price, by mail, post-paid, \$2 00. To give an idea of the nature of the book we republish here the complete

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